FEBRUARY, 1992
Vol. 37 — No. 10
$2.50

Precision SHOOTING

Dealing exclusively with the topic of extreme rifle accuracy

New FCSA 1000 Yard Record Group

Cartridge : .50 FCSA (new wildcat), formed from IMI brass, neck turned, neck sized. Shortened Improved .50 BMG (85% capacity).

Load: 225 gr. AA8700, 2850 fps
Primer: RWS

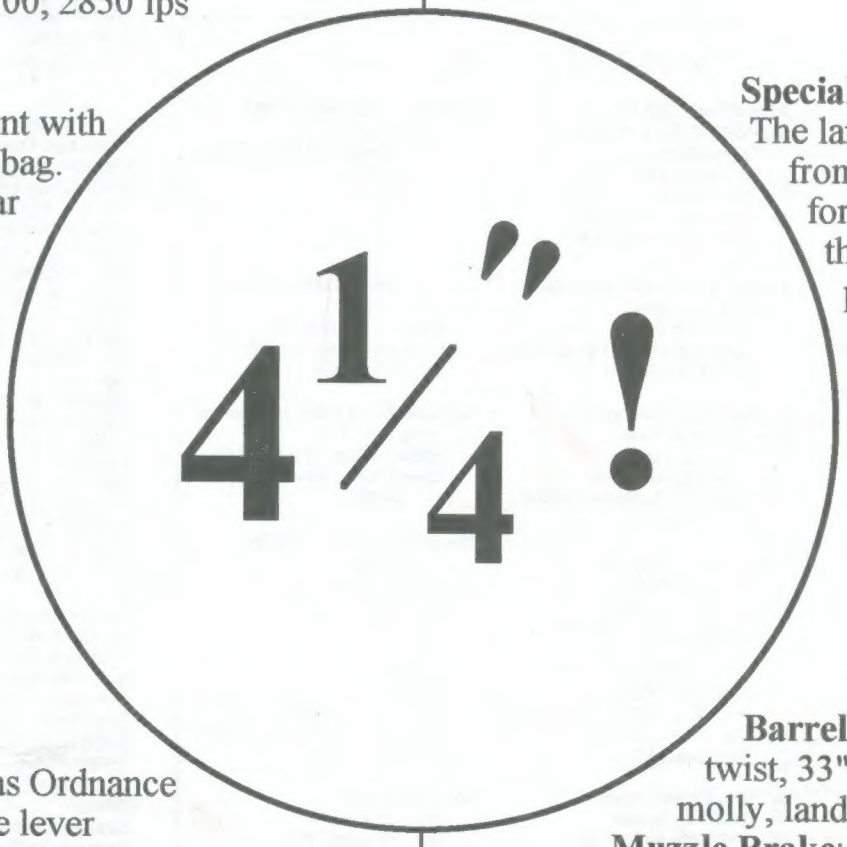
Rest: Bald Eagle front with teflon tape on bag. Baer adjustable rear with teflon tape.

Shot free recoil.

All five shots in 10 ring!

Bullet: Bieber/Zero Index Co., 700 grain Leadloy, centerless ground, .511" driving band, .502" bourrelet, sprayed with Molly 321 dry lube film.

Special Throating: The lands are cut out from .500" to .5025" for .350" to accept the bore riding portion of the bullet. No freebore.



Action: Bassett, Texas Ordnance
Trigger: Shilen, three lever
Stock: Lee Six, Heavy Benchrest
Bedding: Steel Bed
Scope: Leupold Mark 4, Thomas 32X boosted with 1/4" dot on .0045" crosshairs

Barrel: K & P Gun 15" twist, 33" length, chrome-molly, land/groove = 40/60.
Muzzle Brake: K & P Gun Clamshell with inverted cone.

Skip Talbot, 11/10/91, Tucson , AZ

PRECISION SHOOTING

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1991
BENCHREST SHOOTER OF THE YEAR

1)	TONY BOYER	165	points
2)	ED WATSON	152	
3)	RON HOEHN	117	
4)	DON POWELL	110	
5T)	JERRY JOHNSON	48	
5T)	LESTER BRUNO	48	
7T)	SMILEY HENSLEY	44	
7T)	DON NIELSON	44	
9T)	FAYE BOYER	40	
9T)	ALLIE EUBER	40	
11)	CHARLES HUCKEBA	38	
12)	DON GENTNER	33	
13)	LOWELL HOTTENSTEIN	31	
14T)	PERRY MORTON	26	
14T)	REX RENEAU	26	
16)	CLARENCE HAMMONDS	24	
17)	RED CORNELISON	18	
18T)	DON GERACI	16	
18T)	RON PRACHYL	16	
20T)	LOWELL FREI	15	
20T)	LARRY BAGGETT	15	
22)	BRAD ROSENTHAL	14	
23T)	ROBERT DENTON	10	
23T)	DENNY ANDREWS	10	
23T)	GARY OCOCK	10	
23T)	ROGER AVERY	10	
23T)	CECIL TUCKER	10	

TONY BOYER was to repeat his 1990 Benchrest Shooter of the Year accomplishment in 1991, no easy task this year. And ED WATSON certainly made the good Mr. Boyer work for his title, picking up 66 points at the IBS Nationals, and 86 points at the NBRSA Nationals. Not to be outdone, Tony picked up 54 points at the IBS Nationals, and a monstrous 98 points at Midland. Remarkably, taking the two Nationals (only) into consideration... the two of them tied with 152 points each. However Tony picked up 7 points at the IBS Long Distance Championships, and 6 points at the Super Shoot... and it was those13 points that were to be his margin of victory at the final count. RON HOEHN was another shooter who hammered the dual Nationals, with 86 points at the IBS, and 28 points at the NBRSA. DON POWELL chose to set off his fireworks at the Super Shoot and the NBRSA Nationals.

Our final standings, presented here, are later than we would have liked, due to the death of our very competent statistician, Walter Balch, mid-year. Please accept our apologies for the delay.

The Editor

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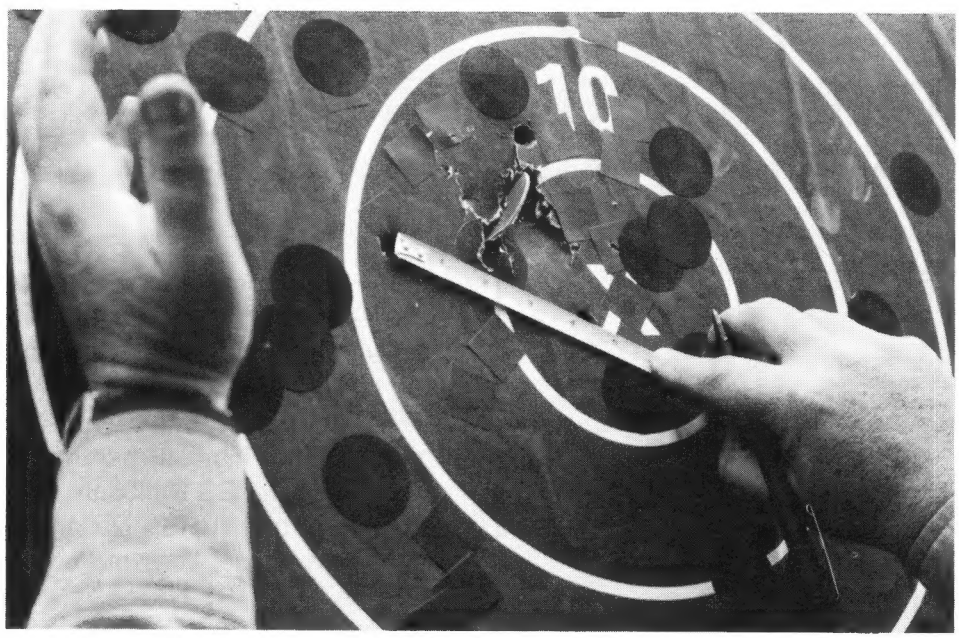
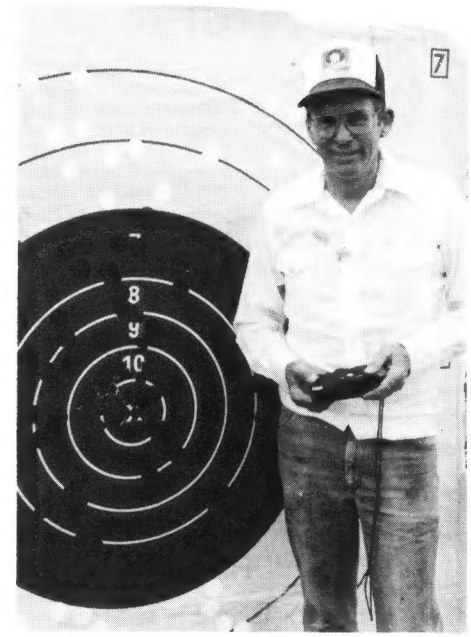
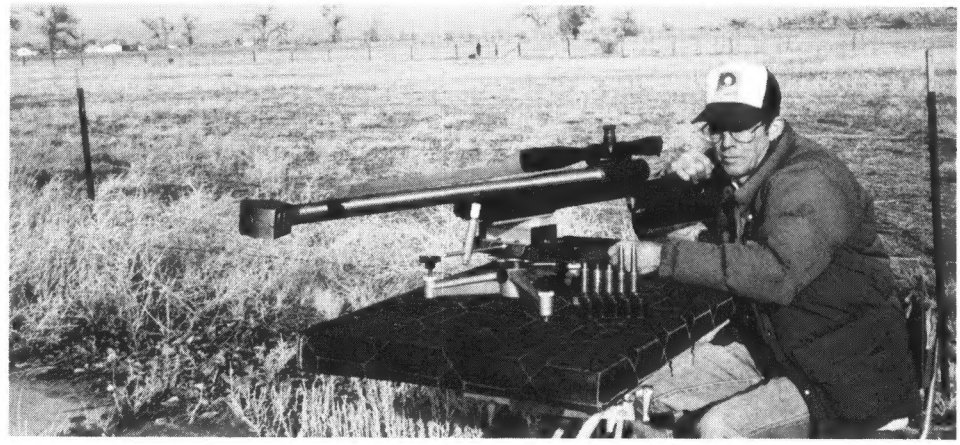




[Editor's Introduction: We have been quite aware of the Fifty Caliber Shooter's Association (FCSA) for the past few years. They have become organized, hold several matches a year, and have a very nice newsletter "Very High Power," which is currently edited by occasional PS contributor Eric Williams. The association is dedicated to the advancement of the .50 BMG cartridge. Inquiries can be directed to the FCSA, 11469 Olive St. Road, Suite 50, St. Louis, Mo. 63141. Precision Shooting magazine has idly watched the group size of FCSA (5 shots at 1,000 yards) matches getting smaller and smaller, as the association members worked to bring more and more accuracy equipment for the previously neglected caliber into existance. The steady advancement of the FCSA was brought home rather dramatically at the end of 1991, at a two day match held at Tucson, Arizona. On Saturday Dennis Chapman shot a new FCSA record group that measured 6 13/16". But then, on Sunday, Skip Talbot, of Fallon, Nevada fired a new record group that measured a dazzling 4.25" . . . and in one fell swoop . . . brought credibility to the FCSA efforts. In a few short years they have evolved actions, barrels, bullets, cases, you-name-it. It was a heck of a challenge . . . virtually starting with a clean piece of paper. Our congratulations to the FCSA, and to Skip Talbot for their respective accomplishments.]



BENCHREST SHOOTER OF THE YEAR 1992

Precision Shooting magazine will continue to sponsor the Benchrest Shooter of the Year contest again in 1992.

Since we have heard no complaints about how the contest has been set up, we will continue the rules for 1992 exactly as they have been in past years.

Double point matches... three in number... the Super Shoot, The NBRSA Nationals, and the IBS Nationals.

Single point, designated matches. The NBRSA has two; the Cactus Classic, and the Crawfish Invitational. The IBS has one; the 200/300 yard Long Distance Championships.

Scoring: 5-3-1 points for the top three finishers at each yardage. 10-5-3 points for each grand aggregate top three finishers, and for each multi-gun crown for which the match sponsors make an appropriate award. These points are all doubled for the three "double point" matches.

The editor will serve as statistician this year... unless some intrepid soul with a computer (or something of that nature) would like to volunteer his or her services. Match sponsors of the six designated matches are asked to be sure to send us a copy of the match report... so that we can see to it that your shooters get what's coming to them (?).

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THE TALE OF 4 1/4"

by

Skip Talbot

The real tale of any endeavor is never the doing but what went into doing it. This group is representative of that in spades.

Eric Williams, Ken Johnson, Joel Ackerman and myself spent about a week cussing and discussing the merits of various bullet and barrel configurations last August on our prairie dog shoot. We figured on using the leaded steel bullets designed by Bill Bieber and made by Zero Index on a centerless grinder. Out of our discussions came the following bullet/bore dimensions: the body of the bullet was to be .002" larger than the bore of .500", and the driving band that was .080" long was to be .001" over the groove diameter of .510". Kenny (of K&P Gun Co.) was to make the barrel of chrome-molly to finish 34" and have a 15" twist with eight lands being 40% as wide as the grooves. The barrel would have a tenon 6" long, 1.750" in diameter with a 3" taper to 1.50" then straight to the end.

I planned to use my Bassett Shell holder action, and Ken said he would install a hanger to take a Shilen three-lever trigger and run the action threads to make sure everything was in line.

Lynn McMurdo, a bulletmaker from Afton, Wyoming and myself had already figured out we wanted a smaller case capacity in order to get more stable ignition and burning rates out of the powders we could purchase. We had been using a 20MM powder but it was no longer available and we were about 70% density loaded. We settled on 85% of the case capacity of the standard case with a shortened 50 case having a 40° shoulder and minimum taper. Calling it the .50 FCSA, we sent a rough sketch to Keith Frances at JGS Die and Machine. Keith made up a finishing reamer to these specs and no neck on the reamer.

The reason for no neck on the reamer was I wanted to have the option for various neck lengths. By seating the bullet only as far into the case as the driving band, a neck of only .350" length was required. Lynn, using a standard 750 grain flat base would need a neck almost .600" long. I had JGS make up a neck reamer .554" in diameter and another reamer .5025" in diameter. I chambered the case body, then a .350" neck, and lastly ran the .5025" throat reamer in .375" to give me the seating depth on the body of the bullet. There is no lead as such in the throat. The bullet body is supported by the lands which have been relieved just enough to accept the bullet body. The driving band is supported by the case neck, and is snug against the back of the lands.

The cases are rough formed, neck turned enough to enter the .554" neck, and then fireformed at about 2300 FPS with a standard ball projectile seated very deeply into the case. I used this fireforming to help break in the barrel in the standard benchrest fashion.

The barrel was crowned with a 90° crown and fitted with a McMillan clamshell brake. The brake was fitted with an inverted cone and a .565" exit.

This whole assembly was plastic steel

Continued on next page

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THE TALE OF 4 1/4"

Continued

bedded into a heavy benchrest stock from Lee Six that I modified a little. I made the bottom of the pistol grip to the toe of the butt parallel with the front of the forend and then put steel rod runners in both sides of the forend and installed teflon tape on all 3 surfaces. I mounted a Premier Reticle Leupold Mark 4 scope boosted to 32X with a 1/4 min. dot by Dick Thomas on a Weaver base. The base was shimmed just enough to put the scope 5 minutes from the bottom of its elevation adjustment at 100 yards.

The whole rig weighs about 42 lbs. I wish it had weighed about 8 lbs. more after the match (50 lbs. is the rule limit). The 700 grain leadloy bullet does about 2850 FPS ahed of 230 grains of AA8700 powder lit off by an RWS primer. That load will have to be reduced about 5 grains in higher temperatures.

There is quite a bit of background involved with the individuals concerned with this project. Ken Johnson graduated from Yavapai Gunsmithing School specializing in manufacturing, and then trained under Bill Atkinson of Prescott, Arizona for 3 years before taking over the barrel making responsibilities at H-S Precision for another 3 years. Living in New Rockford, North Dakota, he has been building a proof of concept computer driven rifling machine, and has been in production of match grade barrels from 17 to 50 caliber since March of 1991. Kenny has made a considerable number of barrels for the FCSA match shooters.

Lynn McMurdo has been building jacketed 50 caliber match bullets for about 4 years now and has experimented thoroughly with them in our competitions. Joel Ackerman went to gunsmith school with Ken Johnson and does much of the work with Ken on all aspects of accuracy in the K&P shop. Eric Williams has a Ph.D. in organic chemistry and works for Monsanto Corp. We have been chasing him at the matches for a considerable amount of time. Bill Bieber is an independent design engineer that built his own falling block 50 and turned his own steel bullets to shoot in it. He started the steel bullet usage in the 50's.

A little about the match itself. We had *very* mild conditions: about a 0 to 4 MPH wind from 6 to 9:00 and thin overcast skies with very little mirage. This held off and on for both days of competition. My first two groups were about 24 and 27 inches. This doesn't seem very good, but the first round of each of these groups dropped almost 20" low and the other 4 naturally went into the 10 and X ring. The third group I was going to be smart, I aimed at the black at 12:00. Guess where it went? Right into the edge of the black at 12:00. I put together an 11" group out of that. I found out later that conditions were switching between the time the sighter target went down and the record target went up. I only had about 15 rounds of the steel bullets through the gun before we left for the match and wasn't sure if it was me or the gun. It wasn't the gun!!

One other thought. I have been following the benchrest game for about 20 years now and have noticed that we are doing exactly what was done in that game. Our biggest problem to date is getting match grade components for these guns. Technology is leading us along different paths than the benchresters went mainly because of the problem of drawing such a long jacket and keeping it concentric. Before anyone throws too many rocks at what has been accomplished to date with the 50s, look at the group sizes before the .222, the PPC, and then the 6mm J4 jackets. Imagine, if you can, trying to do what we are doing with the earlier components.

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100% Cotton Flannel Patches, 500 per bag	
3/4" square, .17 caliber	$3.75
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2-1/4" square, .38 through .45 caliber pistol	8.00
Brushes, brass core with bronze bristles - .22RF, .22CF, 6mm, .25, .264, 7mm, .30, .338, .375, & .45 rifle; .22, 9mm, .38, .41, .45 pistol	$1.10 ea., $9.25/doz.
Bore Mops, brass core, great as chamber swabs - specify .22, .24/27, .30/35, .38, .45	$1.00

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No. 3 Front, 3" wide forearm	8.95
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new thick base	15.50
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Depriming Tool Shell Holder - specify .222 & PPC or .222 & .30 caliber	10.00
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.22RF Accuracy Gauge	37.00
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K & M

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REM 700, 721, 722 Bolt Shroud, hard anodized, black	13.00
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Remington 37	7.20
Remington 40X rimfire	7.20
Remington 540 & 580 series	7.20
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Blitzschnell precision speedlock, ready for installation.	
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Remington 600-XP100	7.20
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Pro-Shot Copper Solvent, 16 oz.	16.00
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Shooters Choice, 2 oz., dropper bottle	3.00
Shooters Choice, 4 oz.	4.25
Shooters Choice, 16 oz.	14.95
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Shooters Choice Gun Grease, 10cc syringe	2.95
Shooters Choice Quick-Scrub, 18 oz. spray	3.95
Shooters Choice Copper Remover, 8 oz.	5.90
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Sweets 7.62, 8 oz.	6.50

OTHER ACCESSORIES

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6BR REM Cases, bulk packed	6.20/20; 6.00/20 over 100
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Remington 7½ Primers	$18.95/1000
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Prices include rivet) .308 size	5.25
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BENCHREST 1992

by

Glenn Newick

January 5, 1991, Practice, American Shooting Centers

Adams barrel #2, CPS AHV Heavy Varmint, USA cases, 47 clicks on a Culver measure H322, Bruno Boats. Winds right to left minimum 10-12 mph. Stepped off the new year on the right foot with a 100 yard practice day in snotty conditions. Small group .294", large group half an inch, Agg in the .4's. Let George Connors shoot one group with wind coaching. He shot a .318". His previous lifetime best was .750" using .264's etc. He was a little excited.

January 6, 1991 - ORSA Postal Match - American Shooting Ctr.

Shot the 100 yard stage of the Ontario Rest Shooters Association Winter Postal match. It's a 100/200 Hunter target with three classes of rifles eligible. Entered the Benchrest class using the AHV, Adams barrel, 68 gr. Bruno Boats, 47C H322. Light winds right-left moving to a headwind with cold and drizzle in the face. Shot a 250 11x. The score should have been much higher, but I ran out of 7 ogive bullets and finished with 9 ogive bullets. Guessed at the seating depth. It was so cold I didn't want to mess with checking the depth. Shot 3 sighters and continued on. On the final cleaning I was shivering so much I couldn't get the drops of solvent to land on the brush. Still have never shot anything but a 250 in the 100 yard Varmint class Hunter events.

As a warm up to the main show I used the .257 Aggwhacker. It's a Hart barrel, Hart Model 1 action Heavy Varmint using Bruno 83 grain flat bases. Started at 52 C H322 - all vertical, 53.5 - still vertical, 55 - better and 56 - much better. In the .3's the last two groups. I'll try and shoot it again Saturday and decide whether to use it Sunday for the Corsicana Club match.

January 13, 1991 - Club Match - Corsicana, Texas

Up at 4:45 AM and North to Huntsville to pick up Dickie Pustejovsky. During the drive we talked about the last season and the one upcoming. With Dickie headed into his second season of competition last year he was starting to get anxious about improving his scores and winning a trophy. Several others in the Houston group made big strides last year. Hostettler won 200 HV at the Crawfish with a .2380. Jim Hunt won HV 200 and the grand at the April New Braunfels match. Dickie finally shot himself into a couple trophies at the Labor Day New Braunfels match. For this year Dickie's striving for more consistency and a few more placements.

When we arrived in Corsicana there were 37 entries. I left the PPCs home to allow a full test to the 25 caliber HV without the ability to switch rifles. Boy what a mistake - after the sun rose the wind kicked up and that was all she wrote for the .25. The bullets aren't stabilizing or aren't good enough to shoot through 15 mph+ winds. This months match was two 200 yard range aggregates. After a surprising .464" match winner the rest of the day was **very** disappointing. 2015BR got rid of the vertical stringing from H322, but the wind was too rough to do much. Next month Walt Berger's supposed to come out with his new Benchrest quality .25 jackets. I'll try the rifle again then.

200 (1)	200 (2)
.464	1.652
1.835	.905
7.93	1.410
1.958	1.562
1.298	1.330
.6285 35th	.6859 33rd

It's been three years since the last 200 yard aggregate in the .6's. I hope it's twice that long before the next one. Time to break out the AHV 6PPC and get serious. On the way home Dickie and I decided to switch rifles. The Hart is right hand bolt, left hand port. He has a left hand bolt, right hand port HV. With fresh paint and $100 I'll get the bolt handle on the correct side.

While painting the stock it slipped off the jig handle and dropped two feet to the floor. That short drop opened up a crack from the back left corner of the action around the bottom of the stock to the bottom of the bolt handle cut-out. I'll bet the crack was already there, hidden under the paint, and is the reason for the erratic shots! Other than being upset at the lesson costing me a new Hall graphite stock I think I'll test the other inconsistent rifle on the rack and see if it has a similar problem.

When the rifle is rebuilt we'll pick up the .25 caliber testing program again.

February 1-2, 1991 - Tutorial - American Shooting Centers

The best way to learn is to teach. Three weeks ago Frank Terrell of Shilen shot the club match in Corsicana. He called after the event and asked if I would be a tutor. With a free weekend it dovetailed nicely. Frank arrived noon Friday with Walter Jankowski. We beat it to the range and shot 200 yards till dark. Each of us would load, then one at a time we would shoot with the others watching. Both of them were moving in the right direction by nightfall. We continued the discussion over baby back ribs and loaded baked potatoes. Saturday morning class started again and both showed improvement using some of the new learned techniques. Frank lost one shot way out in a let-up, I missed it too, and I was just watching. Walters small group at 200 was a .511", Franks was a bit larger, I snuck in a .495 for the small group of the weekend.

Notes: Using the AHV, Bruno boats and 2015 BR powder the rifle wouldn't shoot into an inch and a half. Only change was to H322 and the groups dropped to 1/3 the size.

February 8, 1991 - Practice - American Shooting Centers

Eleven groups at 100 yards - 72 degrees - wind never more than 5-6 mph. My aggregate with the Teddy Sporter was .4522. One .2 and 4 - .5's tell me this rifle is as poor as I thought. At 600

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rounds fired its best 100 yard aggregate is .2812. The lifetime Grand Aggregate is .3857. Two years and a whole lot of money down the drain. I'll throw some more at it and have Audy Adams re-bed the action and put on a Lilja barrel before the next match.

February 9, 1991 - Practice - American Shooting Centers

Using the AHV with Hart barrel #1. The aggregate at the lands was .4668, the aggregate .005" off was .2768 with a .172 and a .203. Used 48 Culver in a USA case and Bruno boats.

Notes: Wind from the North, coming over those tall berms and rolling like a wave, it's a killer.

February 10, 1991 - Corsicana Club Match - Corsicana, Texas

Pete Peterson was up by 3:00 AM in order to be at the house by 4:45. We drove to Huntsville and loaded an apparent rock collection in Dickie Pustejovsky's Suburban. Arriving in Corsicana there were exactly 40 shooters — two full relays. Next year they will register the Winter League. Since the club runs backers already it's no big deal. (Using a two person target crew there's no waiting for the next relay.)

The 100 yard aggregate had lots of good starts and no finishes. First record group I had a granule of powder on the base of the case. It pushed the bullet into engagement with the lands then spread powder everywhere when I tried to extract. Borrowed Frank Tirrells Shilen and shot a .315" in the last two minutes. The next four groups at 100 showed the AHV really wanted to shoot. I was off by a bit and kept spoiling .1's. Conditions were rough with lots of vertical from the quick intensity changes. 200 yards went much better, wind was calming, and I caught letups and piled in a quick group. The .530" I overheld the last shot — should have ended as a .3.

Ron Parker shot a .245" for small group, beat me by .0014 in the 200 yard agg. Dennis Reed won 100, shot a big group at 200 and then finished with a .417" and a .333" to beat me by .0008 in the grand. Between them they were merciless in their ribbing. All in all a good effort.

100 yards	200 yards
.315	.490
.365	.530
.271	.388
.300	.695
.355	.597

Notes: Walters lessons paid off with a second at 100 yards. Moved the bullet to .010" off the lands, 48 Culver, Australian H322, Silver 36X. Shot 67 sighters for 10 groups. Between the calm and pick-up at 200 yards there was a measured two inches of wind drift. The .695 had the group in two shots. The .597 was made with several sighters before each shot. It was tricky.

February 17, 1991 - Practice - American Shooting Centers

Dean Roberson called and wanted to meet at the range and discuss benchrest. Wind was 15-18 mph at the back. We still shot great groups considering the wind. There are several ways to shoot groups. Today the blips were so quick you needed to align, watch through the off eye and hit the trigger just as the flags cracked over. Dean shot his first benchrest group with the CPS AHV. The group was a .199! He followed that with a .3. I then shot two groups, a .212" and a .269". The range has started pulling up the wood benches in preparation for our new concrete tops.

Notes: In extreme winds I'll take them from the head or tail any day. If todays breeze was from 3:00 we would have

Continued on next page

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been struggling to stay on the paper. The AHV is the most accurate rifle I own. There seems to be two classes of rifles. The ones which group from the first shot and the ones that struggle from the first shot. I'm getting clues that the ones that group do so with any barrel and the tomato stakes keep being garden implements for a long time.

February 22, 1991 - Practice - American Shooting Centers

Another practice day. Winds 10 gusting to 20 from 11:00. Good performance considering I only lost one shot on a gust. Agg was .3203 for four groups at 100.

February 23, 1991 - Practice - American Shooting Centers

Saturday — getting ready for the Cactus Classic. Boy did I shoot like dog droppings. Couldn't read the flags worth a darn. Think it was a pick up and hold — wrong. Think it was a let up and hold — wrong. What a way to prepare for the Cactus.

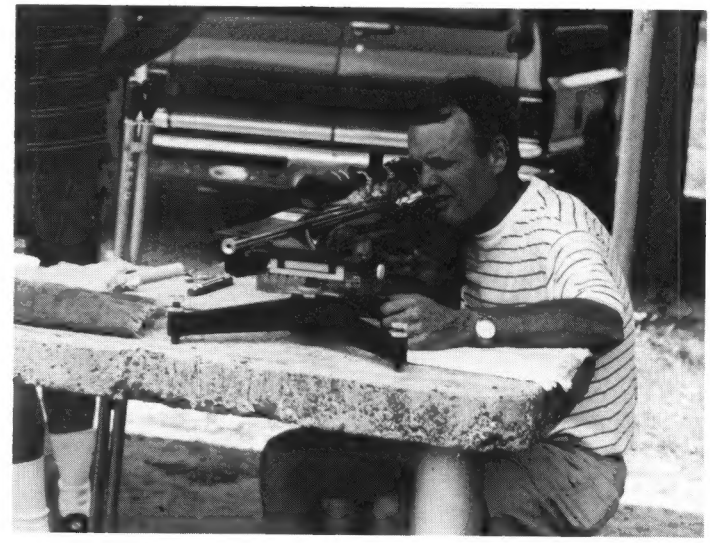
Notes: Dr. John Wynn talked about the Bergers. He said Eunice was so nice on the phone. I told him she's also that way in person. He spoke of people who order bullets then don't pay. Where do they think they are going to get bullets after stiffing Walt? The bullet making group is small enough word would get around.

March 1-2, 1991 - Cactus Classic - Phoenix, Arizona

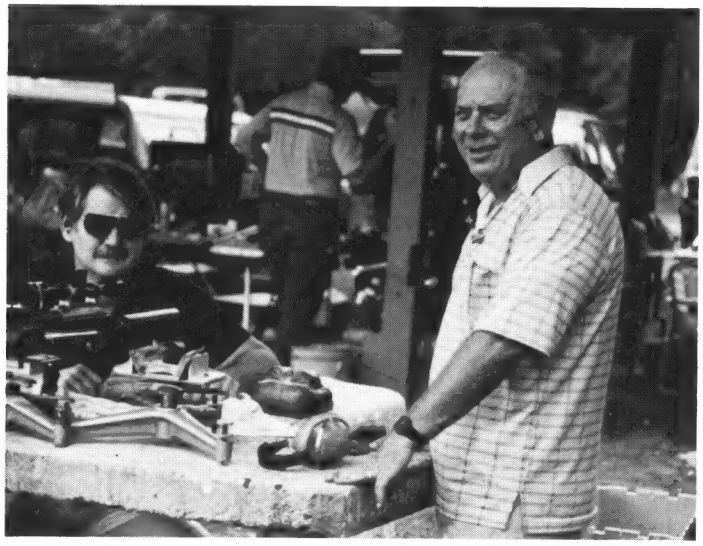
Wednesday, February 27. Left work at 11:00. In the middle of the four hour drive to Gary Sandlins in Dallas. We'll pack his van then twenty minutes to Greg Van Belois. Then the fun 20 hours to Phoenix. A trooper just picked off the Taurus I was following. Sometimes it's better to be a follower than a leader!

The goal for the Cactus is top 5% in the 2 Gun. My goal for the individual to key on is Tony Boyer. We arrived in Phoenix by noon Houston time after driving all night. It had been raining since Deming, New Mexico. We chased the rainstorms into the Black Canyon range.

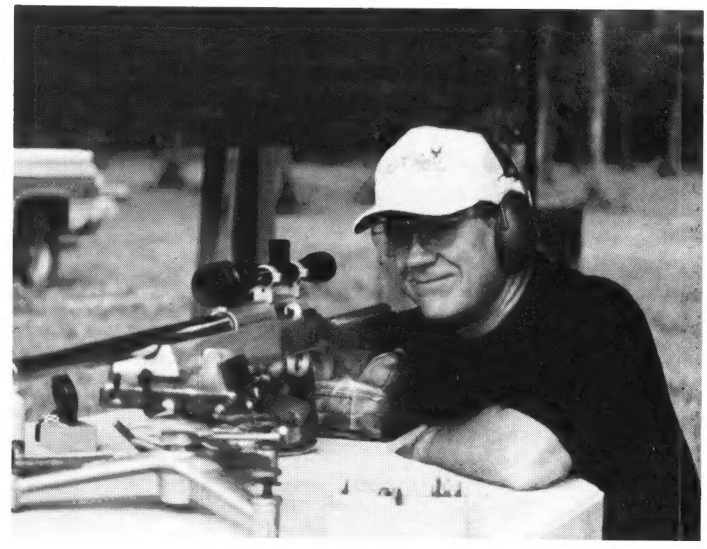
Ralph Council



Dennis Reed



Ron Parker (L) Marcy Lyons (R)



Charles Tuttle

Puddles at the range were deep enough to keep us packed and under cover. When the third row of thunder boomers rolled in we dropped by Dennys for a bite then to the hotel to catch up on sleep. Practice all day tomorrow then 10 1/2 pound on Saturday. Friday we woke up to more rain. The range was a mess with puddles and mud everywhere. Gary and I kicked loose gravel into an empty trash barrel and spread it into the puddles surrounding our bench. Braving the weather enough for six groups in a switching headwind. Several groups were in the low .1's. We packed it up, picked up lunch and rested at the hotel. Back to range that evening for the social. It's fun to see the regulars.

Saturday AM. Used Dickie Pustejovskys' Hall Sporter. It has a Shilen barrel chambered by Bo Hatton. With all the practice lately the results should have been much better. I thought the condition choices were correct, yet a tiny group of .100 - .140 after three or four would turn into a .3 after four or five. Hundred and second place let such a stink they could probably smell me in Houston. in the PM out came the AHV. First shot wasn't on the paper. Like a dumb-ass I forgot about the barrel switch back to the Adams #2 barrel. Three shots into Walts target frames won't make him happy. Results were similar to AM, only this time the mistakes were all my fault. All groups were flat with shots out upwind or downwind. No fault of the rifle.

Both 200 yard aggregates were on Sunday. Neither were much better than the 100's. Rough condition in the morning. Wind on the nose was figured out for the .472. Several mistakes later to move back into the back. Light Varmint was disgusting. Conditions were calming as the day progressed, but the rifle was throwing shots. Inspection on Tuesday at work showed the shots out of the group were not punching round holes. I spoke with Dan Lilja about it and he said a stable boat tail load on the Gulf might not be stable in Phoenix. Then after four bad aggregates it was 20 hours to Dallas and four more home. we drove straight through and arrived home by 6 PM Monday.

Notes: During the match I watched Don Mulhall, Lester Bruno and Brad Rosenthal. Don was the only highly placed shooter using H322. Is it because he practices at altitude and the rest of us didn't have the load right? Shot 136 sighters — most of them for naught. Lost money to Manny Garcia, Greg Van Belois, Frank Wilson and Bill Massey. With Bill I had to stand tall and loudly proclaim him to be the best shooter I had ever seen. Maybe I need to set up flat base loads whenever the match is at altitude?

To be continued

LV100	LV200	HV100	HV200
.354	.861	.230	.472
.323	.584	.353	.609
.425	1.062	.433	1.083
.357	1.188	.387	.703
.308	.952	.379	1.006
.3534 102nd	.4647 117th	.3564 106th	.3873 64th

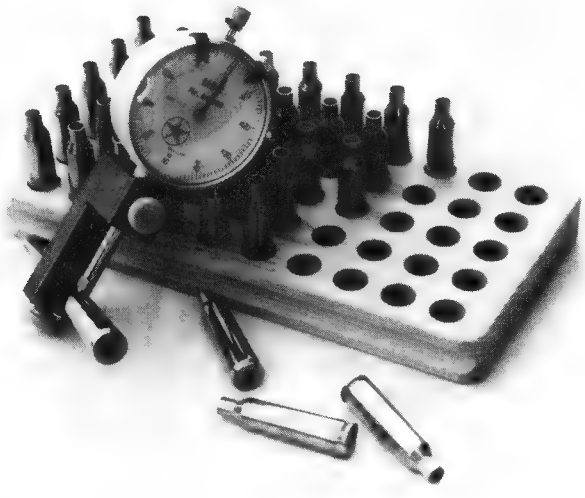
.4091 114th

.3719 84th

2Gun .3905 100th

SINCLAIR INTERNATIONAL

NECK WALL THICKNESS GAGE



Sinclair Neck Wall Thickness Gage shown with .001″ dial indicator

This new item we are introducing is a tool designed for the handloader who wishes to sort brass by neck wall thickness and unformity. It is designed to be used with a .001″ by 1″ travel dial indicator (the same indicator can be used with our concentricity gage and our new neck turning tool).

The intent behind the design of this tool was to provide the handloader (who does not wish to neck turn) a tool for determining neck wall uniformity when reloading for factory chambers. The tool comes with one pilot (one caliber) with pilots for most other calibers available. The dial indicator is sold separately.

The tool is quick and easy to use. Simply zero your dial indicator and slide a sized case onto the pilot and rotate the case while watching the indicator for deviations in wall thickness. We suggest culling those cases that deviate more than .003″ in wall thickness.

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SEELY MASKER

The Evolution of a New Wildcat

or

(I do this sort of thing when I'm bored)

Phase One of the Operation:

Throwing the bait to the sucker;

(The editor of course being the sucker; but ... what's new?)

Dear Dave

I'm enclosing herewith a copy of a letter to me from Joe Golba that you might find interesting. It's in reference to our fooling around with the .243 Winchester and Berger VLD bullets. This is a joint effort by yours truly and Bud Welsh. Bud has a 1.350" Hart barrel on order, and will test the whole idea on his rail gun, and chronograph it as well. Should be interesting.

Seely

***** ******* ******** *******

Phase Two of the Operation:

(Where we let the editor actually see ... "the enclosed letter"....

sometimes it's fun to omit "the enclosed letter"...

and drive him crazy.

But not this time.

We need him here.

I know, I know...

That's hard to imagine).

Dear Seely,

I enjoyed talking to you the other day. Between that conversation and your note in the box with the reamer that you returned it was good to see your spirits up, and your enthusiasm for a new venture.

That .243 Winchester with a 30 degree shoulder sounds intriguing to me. I would have to think that it would make one wicked Hunter class case for the longer ranges when used with the Berger VLD bullets. I fell to thinking after our conversation and ran through some dimensional calculations to satisfy my own curiosity. I thought that you might be interested in them, so I've enclosed a copy of them with my letter.

Working off a copy of the 6x44 chamber print (as supplied by Henriksen) I calculated certain length dimensions based upon a 6x44BR plus 0.260". Then, using the body taper dimensions, the chamber diameters at the base, as well as a spot 0.200" forward of the base were calculated. Referring to my "calculations" sheet, and the chamber print which I've got "doctored up" will show you the results.You expressed one concern over the diameter of the rear of the chamber in relation to the .243 Winchester at that point. However if you will compare the diameter 0.200" forward of the base as calculated above (i.e., 04714") with a .243 Winchester chamber print (I used a print from NRA's Handloading, by Bill Davis) the diameter at this point is identical (i.e., 0.4714" ... refer to the green highlighted area on print). With respect to a SAAMI minimum specification it looks to me as if your proposed case, chambered with a 6x44BR reamer that is run in 0.260" deep will be right on the money. Let me know how you progress with the project.

Finally, I'm enclosing a copy of a photo of Joe Gilbert and myself from the 1991 Maine Score Championships. Your guns made a clean sweep of the four classes at this match. (Editor's note to advertising manager ... send Mr. Masker a bill for advertising on those two sentences, please).

Joe Golba

******** ******* ******** ******

Phase Three of the Operation:

The covert operation approaches the simple editor.

Who, naturally, rises to the bait immediately.

The hook has now been set.

What fools these mortals be.

Dear Dave,

Sorry to hear that we had you a bit at sea with our earlier mailing. (Editor: "at sea" was inadequate as a description. At one point there I thought that you guys were building a crossbow. I was about to suggest that you submit the whole thing to "Precision Crossbowing", and let that editor tear his hair out over it).

Now for a little recent history, in order to assure that credit is properly placed. (Editor: and if eventually the whole thing lays an egg ... the reader may substitute the word "blame" for the word "credit"). This new wildcat cartridge is the product of the imagination (Editor: my Webster's dictionary defines "imagination" as "the

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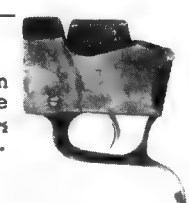


mental power of forming images of unreal or absent objects". How would you, if pressed to make a selection, characterize your new wildcat ... "unreal" ... or "absent"?) and his new neighbor/friend/collaborator Bud Welsh (Editor: Aren't "collaborators" the ones that everyone is trying to execute in the wartime underground movies?).

In a note dated 8/20/91 (Editor: save the note; it might be needed at the upcoming trial) Seely mentioned a new wildcat chambered by running a 6x44BR reamer in 0.260" deep. (Editor: he really means 0.260" DEEPER. I have to clarify this for some of our new embryo gunsmiths ... otherwise we will get a spate of calls from some poor soul ... "Hey, I did what you said ... I run the reamer in 0.260" deep ... and I find myself with a chamber just a mite over a quarter inch long. Are you guys messin' around, or what?"). Seely thought that with Walt Berger's 105 grain VLD bullets, spinning through an 8" twist barrel you could have a heck of a wind beater at 200 and 300 yards ... real neat for score shooting. At that point in time we were referring to it as the .243W 30°. In a subsequent phone conversation Seely mentioned that it could be formed from a .243 Winchester case, but wondered if running the 6x44BR reamer in so deep would result in a chamber with too large a diameter near the case head. So I took it upon myself to run a few calculations and came up with the numbers Seely must have sent you.

On 8/25/91 Seely sent me a fireformed sample of this new wildcat, with a seated Berger 105 grain VLD bullet. It's a cute little number!

Most recently (today, to be precise) I found myself once again on the phone with Seely. It turns out that in putting together a "go-gauge" for his initial chambering, the chamber ended up being that of a 6x44BR plus 0.255", and not the originally discussed 6x44BR plus 0.260". Seely has been in touch with Hugh Henriksen, and a fireformed case has been sent off to Hugh for precise dimensioning, followed by fabrication of a suitable reamer and gauges. Also the name of the wildcat has been settled on ... the "6x30 BS". Of course the letters stand for Bud and Seely (Editor:of course).

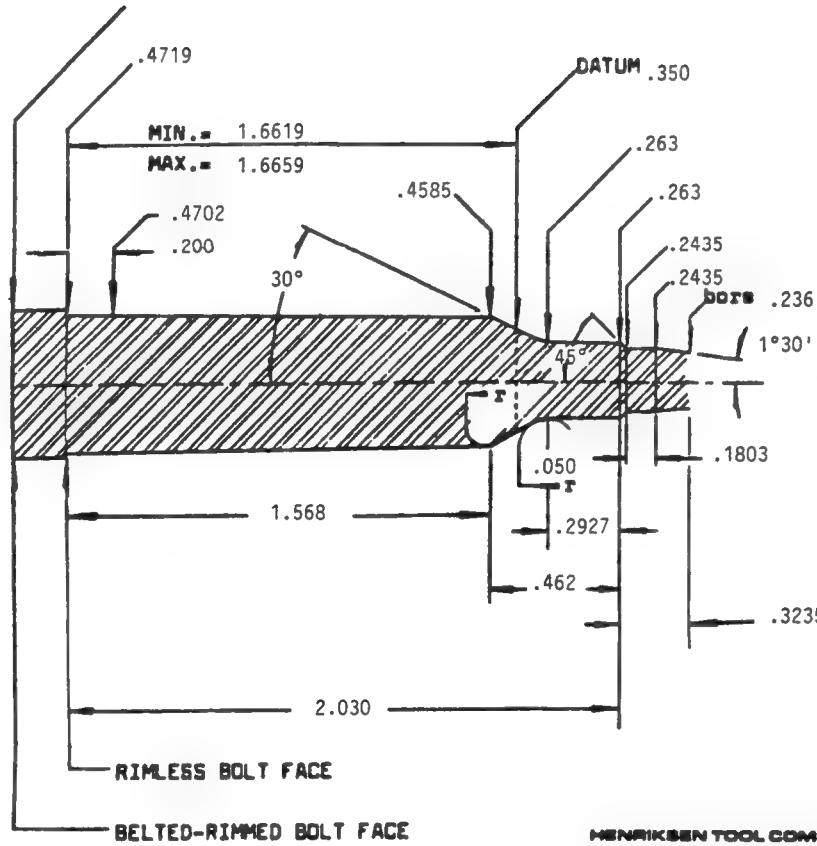
I hope that this brings you up to date on developments to date.

Joe Golba

(Editor: we only can hope that Mr. Henriksen had as much good, clean fun keeping up with the changes as the edi-

Continued on next page

MINIMUM CHAMBER DIMENSIONS , CALIBER 6X30 B.S.
(6X44 +.255)



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SEELY MASKER

Continued

tor did. At one point, when I had an article all worked up on the cartridge (this was in the 0.260" era) and had it all finished, and in to our printer ... who naturally had it all type-set ... I got the letter that said "hold everything ... a minor change is necessary". I had to pull the article ... whereupon the printer chewed me out ... not to be outdone I called Joe Golba and chewed him out. Mr. Golba then called Mr. Masker and chewed him out ... probably right after Mr. Henriksen chewed that worthy gentleman out. In complete frustration Seely called Joe Golba back ... and chewed him out. Since the Golba phone bill was now getting a bit steep ... his angry phone call to me was brief. This is written in late December ... and we have all just started talking to each other again. I think. Anyway, why am I telling you all of this, good reader? Because someday you may want to whup up your own new wildcat ... and you should know in advance that it ain't all "fast cars and whiskey ... long haired girls and fun". Now that I look back at things it seems as if no one chewed out Bud Welsh in all the shouting. Would some reader kindly call Mr. Welsh and give him a piece of your mind on all this. Please be appropriately abusive and obnoxious ... it is not right that anyone should come out of this unscathed. Thank you).

****** ******* *******

Phase Four of the Operation:

Seely Masker writes the editor a summary letter.

He probably wants to get things into print, and recorded ...

Before someone kills him.

I would do it myself

But it's too cold around Buffalo at this time of year.

Of course I COULD mail him a letter bomb.

Dear Dave,

Here are the 6 x 30 B.S. specifications. Since Hugh Henricksen made my 6 x 44 reamer (Joe Golba will attest to the fact that it is a good one), I thought that it would be fitting that Hugh should furnish the specifications for the 6 x 30 B.S., or 6 x 44 + 255.

The free bore is shown as .1803 but can be adjusted for bullets other than the VLD Berger as the customer desires. All I will need to do this is a dummy round with the bullet seated as desired. I will furnish a case for the dummy round.

When Bud Welsh gets around to testing and chronographing his Unlimited barrel. we hope to have some velocity figures for you.

One idea which prompted the development of this case goes back to the 1960's when I was an active woodchuck shooter. (Editor: Mr. Masker does not make it clear if he was active at shooting woodchucks, or if he only shot active woodchucks. We would think that it would be difficult to shoot inactive [i.e., hibernating] woodchucks, although with Seely just about anything is possible, I suppose). My first real varmint rifle was a .243 Winchester built on a pre-64 Winchester model 70 action which I promptly restocked and tuned for accuracy. However, I was never really satisfied with the .243 case with its short neck and 20 degree shoulder, which caused a lot of case stretching and limited one's choice of bullet seating. The heavier, longer bullets had to be seated too far below the base of the neck and the lighter 65-70 gr. bullets could not be seated out far enough to touch the lands and still be held by the case neck.

I know a trend is "bigger is better." (Editor: that's what Dolly always told us). I have done three barrels for one customer, all on the Stolle Teddy action, two in 6mm '06 and one 6 x .284. The 6 x .284 seems to be very popular with the long-range varmint hunters. I wonder how long the barrel will last. In the '60's, we figured that anything over the .243 Winchester of .244 Remington were a bit over-bore and would result in diminishing returns in both accuracy and barrel life. I once saw a .243 Winchester barrel that had been sectioned on a milling machine. It had 3000 rounds through it and there was no rifling left for 3-4 inches except for faint marks where the lands and grooves used to be. At that time I hunted with a fellow named Wilfred DuPont (no relation to the powder company). It didn't take him long to convince me that the heavy bullets, 100 Sierra and 105 Speer, were the ones for long range, 400 to 600 yards. (This is about the limit of the range of chuck shooting country in Washington County, N.Y. where most of our shooting was done.) However, the customer mentioned above is shooting groups in the mid 2's and 3's at 200 yards, so I guess not everyone follows my line of thinking. Those Berger VLD bullets must be good because that's what this customer is using in an 8-inch twist barrel.

Dave, this is all I have for now. Sorry for any delay I may have caused. (Editor: your apology is curtly rejected with extreme prejudice).

Sincerely,
Seely

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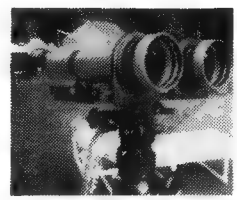
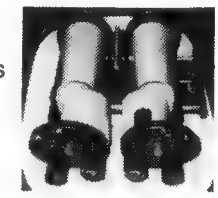
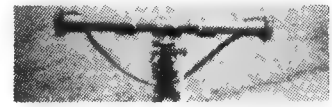

JERRY PHILLIPS
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LIVIN' WITH A LOVELL
or You think PPC brass is a pain

by

Dick Wright

Dear David,

A couple of years ago Glorya and I attended the Midland Gun Show, a once a year event that is always the best gun show in Michigan.

An old friend of mine took me aside during the proceedings and confided that he had decided to sell his R-2 Lovell varmint gun, a custom highwall Winchester. He further confided that I was one of the few people he knew whose character and taste justified the ownership of such a jewel of the gunmakers' art. This sort of thing always works with me and I instantly became VERY INTERESTED.

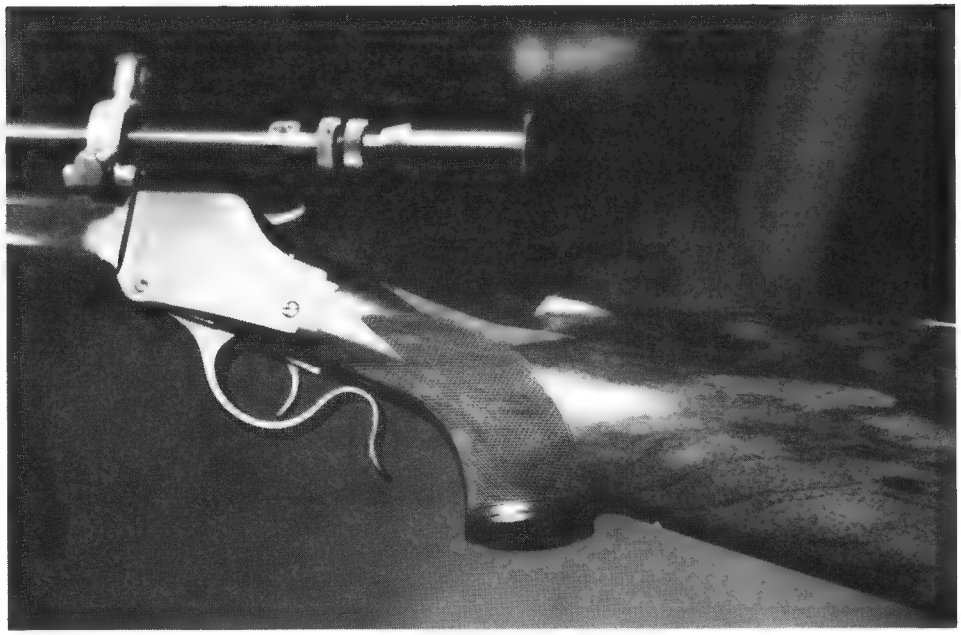
I asked my buddy, Bill, how it shot and he said he had never shot it.

Didn't have a target scope (it had blocks for a Lyman or Unertl) and he didn't have any brass. He said the gun came to him with a manila envelope filled with loading data and targets with groups on them. I usually have a couple of Unertls laying around so I couldn't see any problem. If I bought the gun, I would just mount one up and go buy some brass.

As a boy in the late 40's and early 50's, I spent a lot of time reading my Dad's Outdoor Life magazines. I was especially taken with Jack O'Conner's columns. Every now and then he would write about custom big game and varmint rifles. Just from the pictures, I could see that the fine, elegant lines and lovely wood set these guns apart ..... they were special. I particularly lusted after the lightweight bolt action mountain rifles and the single shot varmint guns and vowed, that when I grew up, I would own at least one of each.

As the years passed, I slowly acquired a very modest collection of custom rifles, first by buying the barreled action and doing my own stockwork, (the first efforts were World Class Ugly, but eventually I learned) and, later, by buying a gun that turned me on and that I could afford. By the time of the gun show mentioned above, I had a few really nice guns, all bolt action, mostly in deer rifle calibers and a couple of varmint guns. This was my first chance to own one of the single shots. I WANTED THIS GUN.

After an appropriate amount of haggeling, when we mutually decided that we had cheated the other to the max, consistant with still making the deal; Bill and I struck a bargain. Glorya and I left the show the proud owners of our first classic single shot rifle ..... truly a PIECE OF AMERICANA. (This is a phase used a lot nowadays at gun shows to describe a useless, rusty old firearm of little practical value).



Probably the best shot of the Shelhamer.

When we got the gun home, we examined it more closely. The barrel was stamped "A.L. Hartung, Pomeroy, O" and "22-3000". I mounted an 1¼" Unertl varmint scope and it looked a lot like the pictures did in O'Conner's articles. I vaguely remembered him writing about and liking the Lovell cartridge. We opened the envelope and found quite a few targets with groups and loads with comments, by the writer/shooter, like "dumb shooter" with an arrow pointing toward a flyer that made a group a lot bigger. I decided this gun had ..... at one

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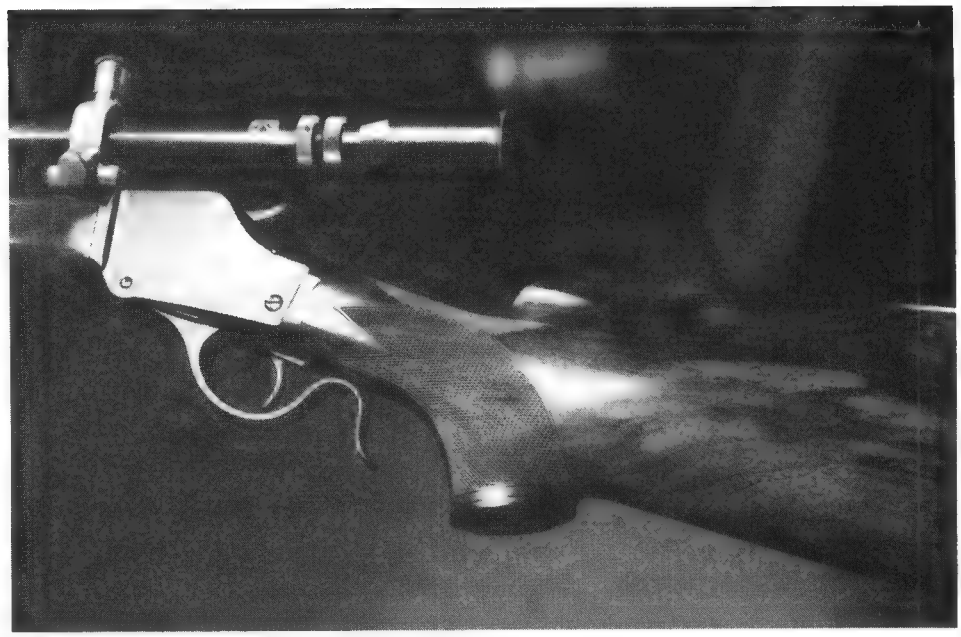

Again ..... the Shelhamer. B & W just can't show you the colors in this wood.

time ..... been owned by a kindred spirit. There was also a copy of an article on the 22-3000 Lovell cartridge as published in The Open Trail, a magazine published in Toronto, Ontario. Interesting Stuff.

The groups averaged about 1¼" with one marked .648". The gun had come with a set of RCBS dies, so all I needed was some brass and we could go shooting.

I called my buddy at the local gun shop, boasted about acquiring the gun and mentioned that I was in the market for some 2-R Lovell brass.

His answer ..... "HUH?"

No problem ..... I made a few more phone calls and, finally, got a guy who knew something about the cartridge. Said it had been quite popular back in the 30's and 40's with varmint hunters. The case was made by necking down the 25-20 Single Shot case which was a full 1/4" longer than the 25-20 round still available. Said there had been no brass made in years. He had no idea how I could get some unless I could find some of the old stuff at a gun show. He said, further, that most of the guys who had owned Lovells had got rid of them years ago because of the unavailability of the brass. In a tone of voice and manner that one usually reserves for the mentally impaired, he wished me luck.

OH, SH--!

Well ..... time to go to work. We have both C.S. Landis books "22 Caliber Varmint Rifles" and "Woodchucks and Woodchuck Rifles" in our collection. I found quite a bit of information in them and also a little in the P.O. Ackley handbooks. Turns out, my info was correct; the Lovell was made from 25-20 Single Shot brass which had been discontinued by the ammo companies years ago. Also found that in the early 1930's, Griffen & Howe had commissioned Winchester to make them one lot of brass which was marked G & H and 22-3000. The Handloader's Manual of Cartridge Conversions states that, "you'll have to make this case from solid brass." However, it did mention that B.E.L.L. Labs was considering a run of the 25-20 SS cases.

I called B.E.L.L. and got a lady who told me they probably had a little of the 25-20 SS brass left. She said that they had been disappointed in the quality, but, if I was interested she would see if she could find some and could probably sell it to me at a fairly good price. I said "Fine" and when she called back, she said they had just one box of 50 cases left and that I could have it for $35.00 if I wanted, but emphasized that I couldn't return it, having been told that they were not happy with the quality. I happily said "Send it". I was now ready, finally, to load and shoot.

Using the dies that came with the gun and data from the Landis books, I made some ammo and headed for the range. First results weren't too bad, groups about like those that came with the gun (1" to 1½" for five shots). However, I lost about half of the brass which came out of the gun with a ring about 5/16" in front of the rim that indicated emminent case head separation.

About this time, we found one new box of Griffen & Howe brass at a gun show for $50.00. I was told by the seller that I was getting a bargain; the normal price was $60.00 per box if you could ever find one. I blanched and paid up. I, also, called my buddy, Neil Jones, and asked him to make me a set of hand dies. While waiting for the dies to arrive, I prepped the G & H brass, flash holes and primer

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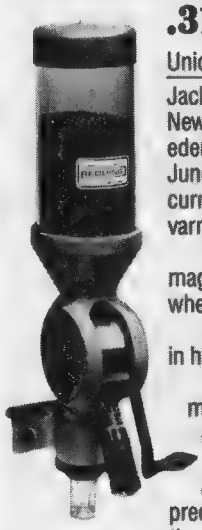
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The Shelhamer ..... III.

Shelhamer ..... IV. Seems I have a bit to learn before I get wealthy photographing guns.

pockets. Reading everything I could find, (there's a fair amount of good data in the Landis books) I decided to start loading with 14.5 grains of IMR 4227 and Nosler and Sierra 52 gr. match bullets.

The dies came and I carefully loaded the 50 cases. Next trip to the range gave me better results. Groups with either bullet ranged from 3/4" to 1". Better yet, no signs of head separation. I have a tendency to blame the expander button in 7/8" -14 dies at least partly, for head separation. The idea of dragging that expander button up through the case neck, no matter how well lubricated, turns me off.

If I may digress for a moment here, I go to great lengths to avoid these expander buttons even on hunting ammo. Usual procedure is to remove primers with a Jones decapping tool. If I have to full length resize, which I also avoid whenever possible, I remove the entire center assembly of the size die, (decapper, expander button, etc.) lube the case and run it into the die. This gives you a properly sized case except the neck is too small. Next, I lube the inside of the case neck and expand it over a Kleinendorst expander mandrel, also well lubed. I use Imperial Die Wax for the lube.

Love this stuff ..... high lubricity and EASY to wipe off. Now I have a properly sized case except the neck is a couple of thousands too big. No problem ..... run it into a hand die with the right size bushing. I know this sounds like a fairly convoluted procedure, but the loaded ammo checks a lot better on my O.D. runout checker than ammo loaded with the normal procedure with threaded dies. One neat thing I discovered by accident one day ..... if you have a neck-turned case, sometimes a threaded die will have a neck I.D. that sizes the neck properly with expander assembly removed.

Back to the adventures of loading for a Lovell. After fireforming the G & H brass, I decided to go up a couple of clicks on the Jones. I also decided to try some Berger 52 gr. bullets seated to jump about .015" to the lands. Back to the range the first nice day ..... took lots of time with my 50 loaded rounds and the results were ..... PURE BLISS ..... I now had a 1/2" to 5/8" gun. Whilst I have no intention of taking it to the Super

Continued on next page

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LIVIN' WITH A LOVELL

Continued

Shoot, this is with an action patented in 1885. "Darn good," sez I.

The child bride, Glorya, and I attend a lot of gun shows in the winter months. Normal procedure is for her to stay at our table, hawking our benchrest reloading tools, while I wander around the show looking for goodies. During the following winter we found a fair amount of brass, One fellow didn't seem to know what he had and sold me about 100 cases for ..... I think it was around $25.00. Said he had taken it to a lot of gun shows and nobody else had been interested. The other fellow had several hundred cases, knew just exactly what he had, but sold them to the child bride at a very reasonable price. I think he felt sorry for her ..... must be terrible to be married to somebody dumb enough to buy a Lovell. Bottom line is ..... we ended up with quite a bit of nearly unobtainable brass.

About this time, a second single shot rifle, chambered for a Lovell came into our life. Gunsmith friend of mine showed it to me one day when I wandered into his shop. Said he had bought it from an older gentleman who was a friend of Tom Shelhamer's. Seems, back in 1937, Shelhamer had called this guy and told him he had a gun he had got stuck with ..... customer had ordered it and failed to pick it up when it was complete. Shelhamer said he could have it for the cost of the materials ..... a princely sum of $85.00. This is a bit amusing nowadays, considering the fact that a certifiable Shelhamer sells for $2500.00 to $8000.00 in the contemporary collecters market.

The inelegant, but loveably accurate Hartung R-2.

Anyway, Kip (my gunsmith friend) handed me the gun and let me fondle it. I handled it with reverance ..... during my formative gun years Shelhamer had been my hero ..... one of the very best stockmakers in the country. He had a source of supply for a seemingly endless amount of imported French walnut, juglans regia ..... the royal wood, the lightest, strongest and, certainly the most beautiful of gunstock woods. This gun was a high wall Winchester with a particularily lovely stock ..... the wood was an explosion of reds and oranges with lots of black marblecake grain running thru it ..... a foreend tip of ebony ..... the checkering precise as only Shelhamer could do.....the wood fit the metal so closely it looked like it grew as one piece. Ole' Tom (Shelhamer) had fashioned the stock with elegant lines ..... not easy to do with the hard-to-stock 1885 high wall action. I immediately came down with a severe attack of gun lust. I HAD TO HAVE THIS RIFLE!.!

Kip didn't want to sell it. I asked him to keep me in mind. A short while later a collecter friend of mine, Kim Stemler, called me and said he had caught Kip in a weakened state and the Shelhamer was now his. He kept and admired it for a while and, one day, brought it up to my place for me to admire. Said I could keep it for a bit. I promptly decided that it was MY GUN and put everything I learned whilst getting my M.B.A. at Arab University into the task of obtaining title.

I offered Kim my Ackley high wall in 25-35 improved. I offered dies and ammo. I offered to forget the high wall action he owed me. I badgered and wheedled. (I even offered him a camel)

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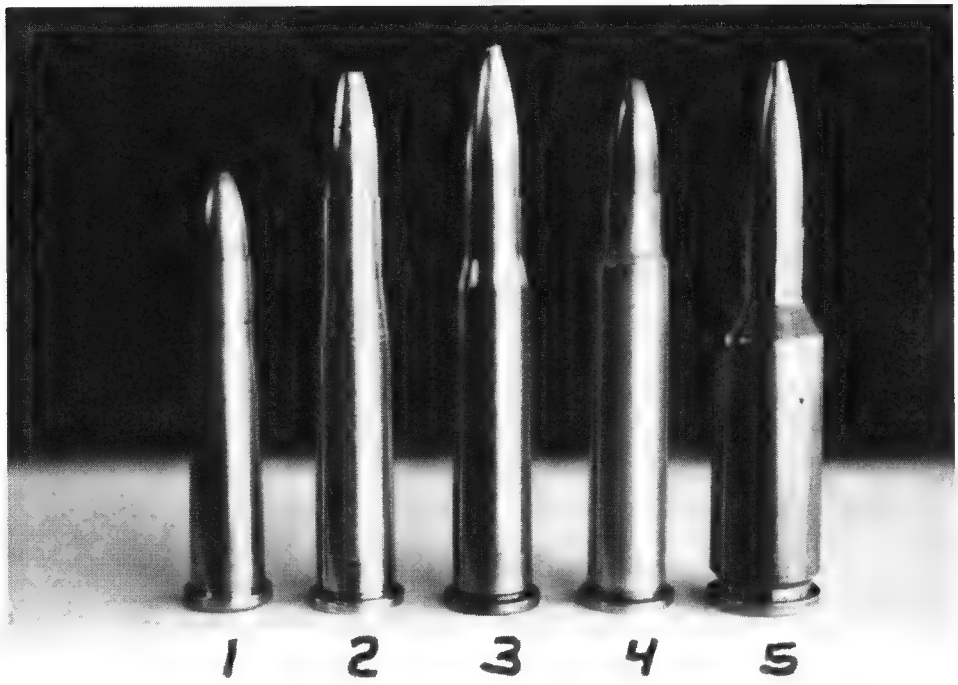
First and foremost ..... I ADAMANTLY REFUSED TO GIVE IT BACK. The Jews at Masada had a picnic compared to poor Kim. Eventually Kim weakened ..... he's a nice person ..... he's got lots of great guns ..... he liked the Ackley. The Shelhamer was finally mine.

With the Shelhamer Lovell came a chamber size die and a hand seating die, both made by Niedner. (Shelhamer was the stockmaker at Neidner.) It also came with a small metal box with a few fired cases and, wonder of wonders ..... two boxes of brand new Griffen & Howe brass.

Knowing that the American thing to do when one gets a new gun is to shoot it, I grabbed some ammo loaded for the Hartung rifle and headed for the local range. Set up all my shootin' junk and looked thru the barrel to make sure I could see all the way through. First round wouldn't chamber ..... neither would the second. Both of them stuck out about 1/2" when gently but firmly pushed in as far as they would go. Packed up my stuff and went home. Took a look at the fired brass that came with the gun. Didn't look a whole lot like the Hartung gun ammo. Thou it was obiviously the same case, there was almost a straight taper instead of the shoulder found on the R-2 brass. Back to the books.

Turns out the first version of the Lovell was simply the 25-20 SS necked down to 22 cal. Case had a shoulder or taper of about 5°.

The second version had the shoulder blown out to 12°45' and looked more threatening although it only held one grain more powder. My Shelhamer was chambered for the first version ..... thank God for the chamber dies. Took some of the new brass, lubed it up and tried to press it into the sizing die. My arbor press didn't have enough leverage to get the brass into the die. Found the best way to form was to put a fair amount of lube on a case, put the die on a wood block, and whack it with a good sized urethane hammer I have. A case would go into the die gracefully and come out very easily. The neck diameter ended up too small (loaded rounds had an unsightly bulge) but, that was easily taken care of by using the Kleinendorst expanders and the Jones neck die. Cases sized in this manner went into the chamber very easily. I wasn't too concerned about headspace because the 25-20 cases are rimmed and can safely be fired even if they are a little undersized. After the fireforming, they fit the chamber well and can be reloaded with the hand dies. Now I could shoot the Shelhamer.



1. 22 Hornet, 2. Original 22-3000, 3. The R-2 Lovell, 4. R-2 Maximum, 5. Our beloved 6 PPC. No. 1 and No. 5 for perspective for those lucky enough never to have been associated with a Lovell.

We only had a chance to fire a few rounds, mostly just sighting the gun in last year, before deer season turned my attention to other things. After deer season comes MICHIGAN WINTER. I really regard rifle shooting as fun and fun ceases for me below 50°. During the winter, my centerfire rifles set in my gun cabinets and are admired but, rarely shot. When we had shot the Shelhamer, in the fall, we found it had a fourteen lb. (prox), four stage trigger ..... hardly conducive to great groups. So, last winter, I sent it out to Creighton Audette with a request to install, if possible, a set trigger such as the Hartung rifle has. After a bit, Mr. Audette called and said that a set trigger was impractical for my gun (would mean making parts and finishing the parts to match the gun would be very difficult) but, that he had reworked my trigger to a crisp 2½ lbs. which he considered satisfactory. I said, "Great, ship it".

Continued on next page

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LIVIN' WITH A LOVELL

Continued

So, finally, in late spring, after the Super Shoot, I had the Shelhamer and time to shoot. First loads were one grain less IMR4227 than I am using in the Hultgren rifle. I seated the Bergers to jump .015" and headed to the range. A quick bore-sight and a couple of shots got it on good at 50 yards. We hung an I.B.S. 100 yd. Hunter Rifle target at 100 and proceeded to shoot our first group. Glorya (who was spotting for me) and I were delighted when the first shot hit the ten ring of the sighter target. I fired another one ..... "I don't see it" says Glorya ..... neither did I. Finally, we found it near the center of the #1 bull. Hey ..... we weren't looking at the #1 bull, I was shooting at the sighter.

I took another shot. This one landed in the #2 bull.

Another,"Oh, SH--".

Back home to the loading room. Seems I vaguely recalled Kip (my gunsmith buddy) telling me the gun had a 52 Winchester barrel. I checked the twist. Sure enough ..... one in sixteen. No problem ..... I had lots of Hornet bullets. We loaded up several different kinds and went back to the range. This time we did a lot better. Best load seemed to be with the little Sierra 40 gr. spitzers in .224" diameter. I hadn't found any .223" dia. bullets that would shoot. Next time I loaded, I decided to try the 42 gr. Calhoun bullets made in Canada. Now we are talking ..... these shot A LOT BETTER. We were in the midst of practicing score shooting, so instead of shooting for groups, we were shooting scores. First target was a 48-2x at 100. It consisted of four 10's (2 - x's) and an eight that leaked

Fur yer viewing pleasure, Guv'ner ..... Kim Stemler's Griffen & Howe 17-222.

Closeup of engraving on Kim's G & H. Engraving done by Jack Haugh. Says this is his version of Josep Fugger's work.

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out at 6 o'clock. I blamed the eight on a wind shift that I hadn't caught. Our range faces East and we get more vertical than we do on most North-facing ranges. Anyway, we were happy ..... the gun was probably shooting as well as it ever had.

Truth is ..... I really think they shoot better than they ever did; specially the Hartung gun with it's 1" twist that likes the benchrest bullets. I think the bullets we have now-a-days are light-years better than those available in the 30's and 40's. Witness the one inch plus groups that came with the Hartung rifle. It really does shoot 1/2" a lot of the time. I serious doubt if I'm that much better a benchrest shooter than the previous owner. (Just ask the nice folks we shoot groups with at Holton). Anyway, Glorya and I now own two single shots, chambered for an obsolete wildcat that will come pretty close to modern factory varmint guns for accuracy.

The modern guns can't come close to the Shelhamer for PURE ELEGANCE. The Hartung, with it's set trigger and accurate ways, is darn nice too.

This summer I was happy to learn that Fred Huntington is now importing Bertram Bullet Co. (Australian) brass in 25-20 SS. I ordered some soon's I heard about it. Turned out to be sorta good news and bad news. The good news is it's available. The bad news is the quality of the small lot we have received. Lot of the primer holes are offcenter. Worse yet, the casenecks mike anything from .0095" to .014" on each case. In contrast, the Griffen & Howe brass has a maximum of .0015" runout, lots of it under .001". (My compliments to Winchester for brass made back in the 30's) This winter I intend to neck turn the Bertram brass down to about .011" to minimize the runout without going too far under chamber size for the loaded round. I will also buy some more to see if it has improved and, if good ones can be selected. This brass is so hard to find that I think the effort is worthwhile.

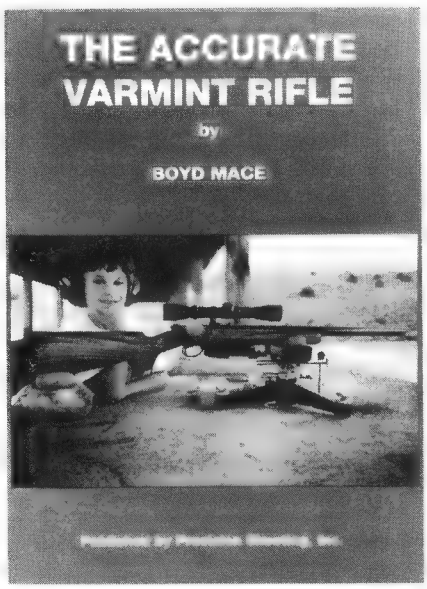
Future plans for these guns include shooting them in the unregistered score matches we hold locally during the summer. We shoot two classes, benchrest guns and factory guns. I think they will let me shoot in the factory class against the Remington 700's in .222. Actually, I know they will ..... I run the matches. I want to see how close to 250 I can get with one of the sixty year old guns. When Kim owned the Shelhamer, he sent it to Jack Haugh, the Indiana gunmaker and engraver for a refinish job. The gun is in 100% shape and it would be desecration to do any fiddling with this gun. The mechanicals of the Hartung rifle work just fine. However, the stock looks like it had been shaped by a Polish committee. Sometime, down the road, this gun will be restocked, engraved by our friend Jack, and the metal will be rust blued. It's so darned accurate, it deserves the investment.

David, I really love these old guns. They were the most accurate and elegant rifles made when we were kids. They were the first guns shot in benchrest matches ..... part of our heritage. I know if the Kelblys' or the Harts' or The Great Gunsmith turned out a gun that shot the 1/2" to 5/8" I'm so proud of ..... they would get suicidal.

Don't matter. Maybe these things really are ..... A PIECE OF AMERICANA.

Regards,
Dick

P.S. There's a couple of photos of Griffin and Howe highwall here as well. They have no connection with the story per se ..... but when did that ever stop PS from doing something that it wanted to do? (Editor: my thoughts, exactly).



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BOB JOURDAN

(Editor: Bob Jourdan is in the habit of sending me carbon copies of his PS correspondence. In a recent mail I found copies of good letters on two of his favorite topics ... the 6.5 mm and the .25 calibers. I enjoyed reading Bob's replies ... and thought that you might, as well.)

Delmar Lamb
Rt. 1, Box 116
Sherman, SD 57060

Del,

Good to hear from you on the .25 caliber rifles. Sounds like you enjoy Precision Shooting Magazine, and can get lots of good stuff out of it.

You asked if I am a gunsmith, and the answer is no, based on what I would call a real gunsmith. That would be one who works on all guns and even makes parts, etc. I work only on bolt action rifles and have my shop at home. Bought my first lathe about 7-8 years ago, learned to run it from a book, added equipment, built myself several rifles and soon other folks were after me to do the same for them. I had made rifle stocks for many years and had done minor gun work, but really only got into building rifles a few years ago. And I have a personal limit of taking on no more than three jobs in advance. I've seen too many shops where customers leave a rifle and it is never worked on, sometimes being pushed into a corner for months, if not years. I prefer to go hunting! Don't want the pressure of too much work to do... And you may have guessed that I write about the makings of a gun from experience, and then getting in one now and then that has been botched up by some commercial shop and getting to figure out how to correct the problems. I have seen several Ackley chambers that were done wrong and this led me to explaining in my articles in PS how an Ackley chamber should be cut.

I do have the .250 Ackley reamer and would rebarrel your M722 if you let me know the details.

You mention that your good .25-284 doesn't group as well as your smaller .25s and that is a rather common problem with .25s that are designed for large amounts of powder. It is rare to find a truly accurate .25-06, .25-284, .257 Weatherby and a host of large capacity .25 wildcats. They all shoot very well for deer hunting, but become marginal for varmints and almost useless for target work in competition. About the largest capacity .25 that will consistantly give varmint accuracy is the .257 Ackley Improved. And the most accurate factory .25 is the .250-3000, but it is limited in range for varmints to about 250-300 yards.

Del, it sounds like your use of the .25-284 on that deer at something like 750 yards pretty well proved that the cartridge is a good one for deer! In my lifetime of deer hunting, including taking over 150 bucks, I have only killed 4 or 5 at ranges of 400-450 yards. I really like your comment that the 750 yard deer was a real unlucky deer! I understand fully, after missing more shots than I care to remember at deer much closer than that....

You asked about making your own bullets, something I have never done. There are a number of advertisers in PS magazine that offer such things as jackets, lead wire, bullet dies, etc. I believe most of the benchrest shooters who make their own bullets use RCBS presses and Simonson or Rorschach dies, and most get their jackets from Walt Berger, listed in PS.

Rorschach Precision Products will send you a lot of good detailed information on making bullets, if you will call or write them. They advertise regularly in the magazine. If you need to buy good .25 caliber bullets at this time, the best are made by Jef Fowler, Bill Brawand and Walt Berger. I have shot a good number of the Fowler .25s and they really do well. At present, I have only tested a few Brawand bullets and they seem to be equally good. The Berger .25s were later arrivals, and I have not had any to try as yet. Incidentally, I won the local Varmint For Score shooting match last month with a .250 Ackley Improved shooting Fowler 85 gr. bullets.

In thinking about a .250 Ackley you need to know that there are two that can be produced. One has a 30° shoulder and the other has a 40° shoulder.

The 40° is by far the most popular, and it is the one that I use. Loading dies can be had from RCBS or Redding and the shoulder angle has to be specified.

Keep on shooting those seven .25s you own. They are a true American innovation.

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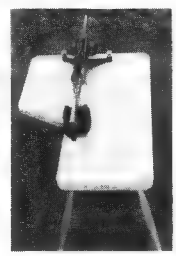

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Dec. 14, 1991

Jan Stenroos
Torggatan 46
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Jan,
I am always surprised to find just how widespread our circulation of Precision Shooting Magazine has become during recent years. And it is interesting to find shooters in Finland interested in the same things we write about in the USA.
Several years ago I visited Norway and took a side trip into the mountains to get away from the routine tourist stops that most travelers seem forced to make. I recall getting to meet real people, see back country log cabins and see very nice elk antlers hanging over most cabin doors. It sure seemed to be my kind of country, but back in the tourist areas any inquiry concerning shooting and hunting was met by blank stares. Did not learn much, but I knew the common folks back in those mountains were alright! They were hunters and shooters...

Then when our government came to its senses and again allowed the importation of foreign surplus military rifles, I immediately ordered a Swedish Mauser M96 rifle in 6.5x55 caliber. That was the caliber that caused many sets of elk antlers to be over those Norwegian mountain cabin doorways. The cartridge and rifle proved to be the most accurate set-up for the least investment I've ever made. Since then I've converted one M96 to a very nice sporter with the original barrel cut to 24" and capable of .6" groups, another M96 to a beautiful little 18" barrel Mannlicher type, and then went big-time with a Sako action and Douglas premium target barrel and Myrtle wood stock. I chambered it for the 6.5x06 Ackley Improved (the same as your 6.5 Turbo...?). It has become my favorite hunting rifle and I must confess to the start of an affair with the 6.5 calibers.

Our problems in the US with the 6.5s start with a lack of really accurate bullets — handmade, benchrest quality. Next, our major rifle manufacturers have never consistantly produced and advertised 6.5 caliber rifles and ammunition. It has been sporadic. Between 1913 and the early 1920s we may have had the best 6.5 ever designed in the .256 Newton, but we dropped it when the Newton Company failed. Since then we have followed up with two rather poorly designed 6.5s, the .264 Winchester Magnum and the 6.5 Remington Magnum. Both are about dead now, but hanging on. Now Winchester has started producing the M70 rifle chambered for the 6.5x55, but has not produced ammunition or done much advertising of the caliber. It is almost as though they want it to fail...

And I guess this brings me to my plans to develop a 6.5x55 Improved. I have always considered 3000 fps to be the lowest velocity that will produce a trajectory that is useable for general open country or long range hunting. In the 6.5 caliber the lightest bullet made strong enough for use on deer and other big game is 120 grs. Since it is difficult to drive a 120 gr. bullet to 3000 fps with the standard 6.5x55 case, some improvement is called for.

I have used the grossly overbore .264 Winchester Magnum and found too many problems. The next smaller case I've tried was the 6.5x06 Ackley Improved, and it, too, is overbore and somewhat inefficient. The barrel life will be short. The next smaller case would be the old obsolete .256 Newton, but it is not available. To avoid a total wildcat, why not improve the standard 6.5x55 to give the same, or approximately the same, capacity of the old reliable Newton? The rifle would still shoot the standard 6.5x55, a real advantage if you ever lose your ammo on a trip, etc.

This briefly covers the background and reasoning for the improved 6.5x55.

But the plot now thickens. My intent was to simply order up the 6.5x55 Ackley Improved. Everything about it would be right for the goals previously set. Then the roof fell in. There never has been a 6.5x55 Ackley Improved! No so-called standards have ever been set. And now with Mr. Ackley gone to the happy hunting grounds, the project becomes mine without exact guidelines.

Now for your question concerning 6.5x55 Improved dimensions. They have not yet been worked out. I plan to set up the dimensions in the next few weeks, but this will require considerable research. Several things have to be cleared up. Norma claims the cartridge head diameter is .480"; Sierra and Nosler show it as .476"; my case measurement

Continued on next page

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BOB JOURDAN
Continued

shows .478". The really critical dimension, however, is that of length from case head to the juncture point of the shoulder and neck. This is where improved cartridge headspace is measured. Norma shows this to be 1.856"; Sierra shows 1.840"; and Speer shows 1.867". Thus, the extreme spread is .027", which far exceeds any allowable headspace tolerance!

My research on the shoulder diameter of the standard 6.5x55 shows an extreme spread of .015", with a range from .420" to .435". This is not too important even though it indicates a variation in the degree of slope of the shoulder, normally shown to be 25°. I plan to blow this out to 40° and enlarge the shoulder diameter to about .461", if things work out.

Jan, I have had several discussions with our die and reamer companies concerning all these variations on the 6.5x55. They have been helpful and several have been kind enough to offer copies of their drawings on the standard as well as the several wildcats derived from the 6.5x55 case. They all agree that the Ackley form has not been done. From these case drawings I hope to be able to determine the dimensions I will use to make up my 6.5x55 Improved. I may even have to pick a name for it... In any case, these dimensions are still several weeks or months into the future so I am of no help to you as yet. This will all be covered in articles in PS magazine as developments occur.

Among the plans I have, I hope to find a short, left-hand action for this cartridge. As you may know, the bolt face of our standard American actions is too small for the larger 6.5x55 head. A Remington bolt requires being opened up to about .480" and a new extractor of some kind added. Usually the Sako extractor is the best, but it is expensive to have installed — close to $100. The Winchester M70 is properly sized for the 6.5x55 case head, but they don't offer left-hand bolts. Sako makes an excellent left-hand action and has the proper extractor to allow the bolt face to be opened up, but it is offered only in the long model.

The barrel will probably be a Hart stainless benchrest quality with a 10" twist. A 9" twist will almost stabilize a very long 160 gr. bullet, and since I use bullets of 85 to 129 gr., the slower twist should be better. The chamber will be standard or perhaps tightened in the neck by maybe .003" to take out excess sloppy conditions while still hopefully accepting standard factory ammunition. If the slightly tight neck does not accept most or all factory ammunition, I can always ream it out to full standard.

For stocks, I have come to like the McMillan fiberglass jobs. Especially those with the molded in colors. This way I avoid the problems of paint on a stock that will be used a great deal in the field. On the benchrest stocks, painting is passable, but still subject to cracks and chips.

The scope I will use will have an adjustable objective lens to keep from having the terrible parallax problems found in all other models. I really prefer the Bausch & Lomb 6x24 scope, but since I see this rifle as a mountain hunting item, I may use the excellent Leupold 3.5x10.

This will bring you up to date on my project and tell you why I really can't give you cartridge case dimensions just yet. Since both you and I are in agreement on this cartridge, I am sure we are on the right track....

Keep on shooting — and reading PS magazine!

Bob Jourdan
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John,

Happy to hear you really enjoy *Precision Shooting Magazine*, especially the stuff I have been writing. I thought the coverage of the 6.5mm cartridges would get comments, but I didn't think I would hear so much on them. All good, too! Seems there are a lot of shooters out there who are trying out the various 6.5s but don't seem to be able to fine much out about them through the regular outdoor type magazines. Here at P.S. we try to cover the things that don't ever seem to come out in the advertising from manufacturers. But, as you know, even the manufacturers are not saying anything about their own products if they happen to be in the 6.5mm group. How much have you seen on the Winchester M70 in that caliber...? Have you seen any extensive advertising on the 6.5x55 ammunition now showing up in all the shooting shops...? Maybe you and I can get them to move out with something...

You started out with a real bargain when you obtained that Mauser M96 in 6.5x55 caliber. I have never had a more accurate set-up, and for such a little investment. Of course, I just had to convert my excellent M96 to a very nice sporter after finding out just how good the thing really was.

I, too, would by now own a Winchester M70 in 6.5x55 if they would build it in left-hand models, but for some reason Winchester has never recognized that 10-15% of all shooters shoot left-handed...

John, your lineup of questions on the 6.5x55 really gets into the requirements of what it takes to make any rifle shoot better. Most regular factory run rifles require quite a bit of work on them before they really begin to shoot well, and even then there are some that never will meet expectations.

Since you say your M70 doesn't hold tight groups from three shots to five, I wonder if you checked the barrel for free-floating, full length? To do so, just slip a dollar bill under the barrel at the tip of the stock and try to pass it all the way to the action without a hangup. If it isn't free, then the stock needs to be relieved. Also, have you rebedded the stock? This is something that usually has to be done to any factory rifle to make it perform well. Then of course while the gun is apart the trigger pull should be adjusted down to an easy pull. I prefer something less than two pounds, but the factories are usually setting them around 5 to 8 pounds or more. The last M70 I worked on in my miniature shop had an 8 pound trigger pull, and I was able to adjust it safely to 1.5 pounds. It turned out to be really good.

Usually by doing only the above things, you can get a factory rifle to group around 1" at 100 yards with several different loads.

You mentioned the Redfield 2x7 scope on the rifle. I have had several rifles in this fall for checking and found the scopes to be much of the problem. It all comes from built-in parallax where the target and the crosshair are not in the same plane. I have seen scopes with up to 1" error built-in, both verticle and horizontal. This really causes inconsistant shooting, and is hardly ever checked by an owner. To check this, set the rifle up in a very steady manner at the bench so that it will not move. Have the crosshair lined up on a small target spot like a 1" square or any visible crossing lines. Then without touching the rifle in any manner, view through the scope at the spot and move your head left and right while watching the crosshair on the target. If the crosshair moves off the spot, parallax is there. Repeat this with an up and down movement of your head and check for the same crosshair movement up and down on the target. This is a test of skill on your part, and you must be critical of the movement seen. It is real, and the amount of movement will be added into your group size. For example, a recent rifle I checked for a shooter who was unhappy with his 1 1/2" to 2" groups had 1" to 1 1/2" parallax built-in to his scope. I placed one of my known good scopes on the rifle and it immediately went to shooting groups under 1"...enough said.

In recent years all the factories have started freeboring their rifles to try to reduce their liability when someone blows the stuffings out of their pride and joy. This is simply the cutting out of rifling for a short distance ahead of the chamber throat. Thus, the bullet can fly unrestricted briefly before hitting the lands and building up pressures. This also allows gases to blow by the bullet and bullet upset occurs before it can enter the lands. This plays havoc with accuracy, even though accuracy may remain good enough for the average deer hunter. You should find how far out your bullets must be seated to reach the lands. To do so, paint the ogive, or curvature of the bullet point, with something like Magic Marker, lipstick or smoke. Seat the bullet as long as you can (without powder or primer!!) and then place it in the chamber and gently try closing the bolt. The idea will be to either push the bullet into the case by the pressure of the lands, or at least mark the painted point with six little bright spots indicating that the bullet has truly touched the lands. Your barrel does have six lands...? Or is it four... or eight... You get the idea. If by chance the bullet sticks in the barrel and only the case ejects, use your cleaning rod to gently tap the bullet out. Reseat, repaint and try again with a slightly shorter load. In any case, when you get the cartridge to a length of having the bullet just touching the lands, set your loading die accordingly and load some test rounds. Often this is the length that will suddenly make a 1 1/2" shooter into a 3/4" shooter. If not, shorten the load by about .010" and test again. Repeat again with .020" shorter. At some length, the cartridge will be improved. Almost always if the bullet has to jump very

Continued on next page

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BOB JOURDAN

Continued

much to find the barrel lands, the accuracy won't be any too good.

By now you ought to be well confused, so I can get on to your particular questions.

You have tried some good powders. I find slow burning numbers to be best in the 6.5x55, starting with about H380. For primers I've found Federal to be excellent, followed by Remington. Sometimes the Winchester primers don't produce the best accuracy. As for cases, usually Norma are better than others, but not always. I hate to do this, but I would recommend that you try weighing some cases and group them into about three sets by weight. Then load and shoot them, and you just might see some will certainly out perform others. I hate this because it drives me up a wall. However, I've been told that if you have one of the new electronic wonder scales, it is not much job at all.

Bullets are a real problem. None are made accurately, and none will compare with the match 6mm or .22s. I was recently sent a box or target grade RWS brand from France by a reader. They are 93 grain, and hold many target records in Europe where they know how to make the 6.5mm shoot. I will be testing them if I can ever get caught up from a full month of deer hunting... Sierra makes a 120 gr. match bullet and I think Hornady makes one in 140 gr. My tests, however, show that the 85 and 100 gr. are more accurate in the 6.5s that I own. Incidently, I got a fine mule deer in Wyoming with my 6.5x06 Ackley shooting the 120 gr. Sierra match bullets at about 3200 fps. The shot was over 400 yards as measured on the topographical map. Seemed more like a mile in that rough canyon...

Generally, I am getting the best accuracy when I load the 6.5x55 down slightly, by about 2-3 grains. Below are my best accuracy loads at this time:

140 Hornady	42 grs.	H380	F210 Primer	2582 fps	.56" @ 100yds.
	43 "	H414	" "	2599 fps	.37"
120 Nosler SB	34 grs.	AA2520	F210 Primer	2454 fps	.62" @ 100 yds.
	47 "	AA3100	" "	2631 fps	.69"
120 Sierra	44 grs.	H380	F210 Primer	2787 fps	.54" @ 100 yds.
	50 "	AA3100	" "	2841 fps	.78"
100 Sierra	47 grs.	H380	F210 Primer	3016 fps	.50" @ 100 yds.
	48 "	AA4350	" "	2953 fps	.55"
85 Sierra	46 grs.	H380	F210 Primer	2998 fps	.26" @ 100 yds.
	49.6 "	H414	" "	3138 fps	.47"

These are not top loads, but are the best accuracy loads that I have found. All were tested in a M96 with 24" military barrel, about 75 years old!

Clean the barrel at least every 20 shots and use plenty of Sweet's 7.62, along with brushing and BR9 solvent, and of course a plastic covered rod used with a rod guide from the chamber end.

John, I hope this helps you some. I know the 6.5mm is a great one and just wish I had a M70, LEFT-HAND, to play with. Do you think I could talk Winchester into building me a left-hand M70 in 6.5x55..... or anything...?

Don't give up. That rifle will shoot!

Bob Jourdan
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New (1992) Lot Sako U.S. A. PPC Cases

by

Gerza Nagy

Dr. Palmisano has now authorized me to show my test results of this new lot of Sako PPC cases. He is now ready to order production of this new lot of cases. Dr. Palmisano has become tired of hearing shooter's complaints about the earlier lot of P.P.C. cases that were also headstamped U.S.A. They were designed to fit the factory chambers of Sako rifles. They were heavier cases in the head area and had less case capacity. They also would not chamber in some guns that were chambered to fit the .220 Russian cases. They also needed more frequent trimming.

He had 100 cases of a sample lot of the new cases shipped to him that were designed to duplicate the original .220 Russian cases in case head size and interior capacity. He sent some of them out to get pressure tested and Rockwell tested for hardness.

I got 35 cases of this test lot to test from Dr. Palmisano. They are headstamped Sako 6PPC U.S.A., the same as the older lot. These new cases will have a star or asterisk added to the headstamp for identification purposes. This will be in the open area on either side of the word "Sako".

I checked my sample lot very carefully, as received, without anything being done to them. The case head diameters just above the extractor groove were .439 or very slightly under. That was exactly the same as the .220 Russian cases. They should chamber easily in all chambers. I weighed all of the cases and checked them for length without trimming them. Cases as received:

Weight

110.5 grains — 4 cases
110.7 grains — 13 cases
110.8 grains — 11 cases
110.9 grains — 4 cases
111.0 grains — 3 cases
Total — 35 cases
1/2 grain variation in weight

Case Length

1.504 — 1 case
1.505 — 6 cases
1.506 — 20 cases
1.507 — 6 cases
1.508 — 2 cases
Total — 35 cases
.004 variation in length

The uniformity of this sample lot is almost unbelievably close. It must be remembered that when actual mass production starts there is probably more likely to be more variation.

Comparison chart **after** neck turning and trimming to 1.490 inches:

	Earlier U.S.A. (smaller capacity)	New U.S.A. (test lot)
Case weight	120.5 - 123.4 grains	108.9 - 109.4 grains
Case head/web diameter	.4407 - .4408	.4388 (Under .439)
Case rim diameter	.444 + or –	.442 + or –

Case head measurements and case weight differences can be used to identify the two different lots of cases. However, they will also have an asterisk or star stamped on each side of the word "Sako" on the new lot.

My test lot was preformed to the correct shoulder angle in 6PPC caliber. The new cases will be available in both .22PPC and 6PPC. They will both be preformed. The necks will have to be neck turned to chamber in the custom chambers. They should fit the Sako factory chambered rifles without neck turning.

I could tell no difference in case capacity of these new cases compared to near equal case weight of the .220 Russian cases. I had the exact same load in both sets of cases. There was only 1 ft. per second difference in the light varmint gun and 3 ft. per second difference in the heavy varmint gun. The light varmint gun was 3035 to 3036 FPS. The heavy varmint gun showed 3118 to 3121 FPS average with the identical load in both guns.

About two years ago I had purchased 165 cases of .220 Russian. After neck turning and trimming all of them the cases were mostly between 107 to 110 grains. These cases were all sorted by weight. For the test, I used cases in comparable weight to the new test lot.

After several firings and neck trimmings of the new test lot, I reweighed all of them again. The cases now weigh:

Weight Cases
108.9 grains — 1
109.0 grains — 8
109.1 grains — 6
109.2 grains — 7
109.3 grains — 4
109.5 grains — 2
Total — 28

I had lost 7 cases in the neck turning process due partly to a faulty neck turner. As new the cases weighed 110.5 to 111.0 grains. After several firings and trimming and second neck turning to .008 neck thickness the new lot of test cases are now 108.9 to 109.4 grains. In both instances there was a .5 grain differential. The average weight loss after neck turning and trimming was 1.6 grains.

Continued on next page

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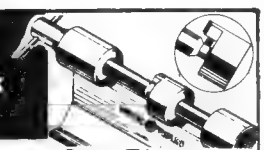

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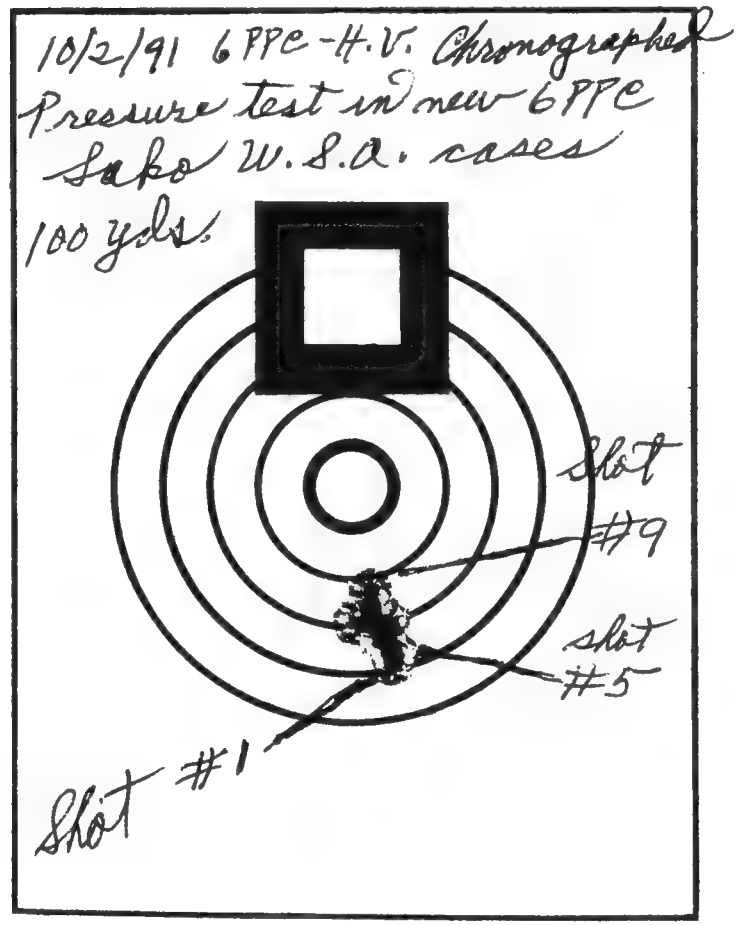
New (1992) Lot Sako U.S.A. PPC Cases

Continued



The only fault that I found in the test lot of cases was the apparent softness, particularly in the neck and shoulder area of the case. This will be corrected in the new cases. Dr. Palmisano will have them make the new cases to Rockwell "B" hardness.

I tried to full length size the new cases before neck turning them. The shoulder collapsed with the neck pushing down into the shoulder. After losing the first 2 cases I abandoned that idea. Then I lost 5 more cases where the necks shredded during neck turning. I used a little more care and got 28 cases turned without incident.

The cases lengthened more than normal and needed more frequent trimming after firing. This will be corrected with the hardness of the brass.

I ran a pressure test. I used one single case reloading it with an increase of one click at a time for each shot to see where the pressure signs would develop. Test date Oct. 2, 1991. I used my 6PPC H.V. gun with C.P.S. action and 23" Broughton barrel 1-14 twist. The powder was G.I. H322 lot #42288. The bullets were 68 Euber F.B. Lot #9. The ProTach chronograph was 10 ft. in front of the muzzle. The test started 3:45 p.m. with hazy sun and 10 to 25 MPH windage from 11:00

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and 12:00 o'clock. The temperature was 80°. The barometer was 30.04 inches and humidity 47%. I selected this powder lot for the test because I was very familiar with it.

Shot No.	Culver Setting	Weight (Grains)	Velocity (F.P.S.)
#1	50.0	27.1	3039
#2	50.5	27.4	3062
#3	51.0	27.7	3112
#4	51.5	28.1	3136
#5	52.0	28.4	3179
#6	52.5	28.7	3189
#7	53.0	29.0	3244
#8	53.5	29.3	3261
#9	54.0	29.6	3289

This test was designed to check the pressure in the new lot of cases. My CPS action is a very strong action and I went a lot farther with the powder increase than I normally would.

Do not try to duplicate any of these loads by volume or weight of the powder. A different lot of powder or other components could be drastically more dangerous.

The primers started to flatten and crater starting with shot #5 and got progressively worse with each shot. There was slight swelling in the web area that the full length die took care of to allow the bolt to close and open after each shot through shot #8.

After shot #9 the bolt got very stiff to open. I had to tap it with the palm of my hand to get extraction. The last 3 shots were compressed charges. My full length die was set to push the shoulder back about .002 that allowed easy chambering with each shot. The cases were sized with my Redding full length die which very closely matches my chamber. No lube was needed in this die. My chambers are minimum.

The cases were trimmed to 1.490 inches before the test. The case length grew to 1.500 inches after shot #6 and 1.508 after shot #9. This was the only fault that I could find with these cases. The brass has a tendency to stretch more than normal. The case head above the extractor groove increased in diameter to .4396. That is an increase of less than .001 of an inch and did not create any problems in chambering after resizing.

Dr. Palmisano sent a letter to the manufacturer that the new cases have to be identical in size and case capacity as the sample lot. The hardness must be increased to "B" Rockwell. He said he would not allow his trademark on any cases that are not right. The cases are scheduled to arrive here by spring.

Geza J. Nagy

JOHN BUNCH

Dear Dave

You missed the name of the .17 caliber (on .308 case) shown on page #24 of the December issue of PS.

That's a .17 Bunch Nail you're looking at, lad! I'm quite sure that this is the cartridge that I gave to Pete Callan at this year's Crawfish Invitational.

The cartridge was made up solely to demonstrate what could be done with my sets of case forming dies. (Just go ahead and try to do this with a set of reloading dies from your neighborhood sporting goods store!).

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LEFT THE RANGE

BOB KEEL,of South Bethlehem, New York, left the range forever on December 9, 1991.

Bob was a shooter in the "pioneer era" of benchrest shooting; he shot at the Johnstown matches in the early 1950s, together with his daughter Kay.

For many years Bob operated a gunsmithing shop adjacent to his home in South Bethlehem, and his work was well regarded.

Bob Keel was the person who, back around 1950, persuaded a skeptical Clyde Hart to "try" barrel making. An earlier generation also would remember him as the fellow who fired the cannon at Johnstown, New York ... the signal to start the match.

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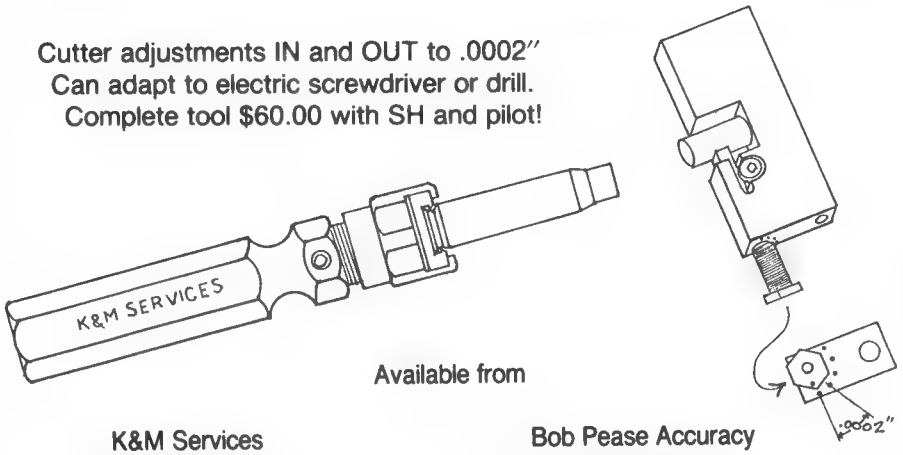

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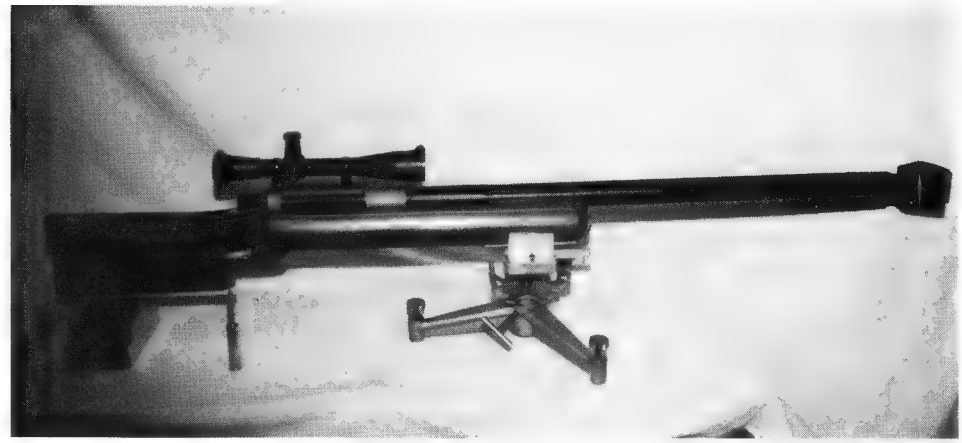
PRECISION SHOOTING WITH .50 CALIBER RIFLES

by Eric Williams, Ph.D.

Introduction

Whether ones' sport is racing, mountain climbing, or shooting there will be those individuals wanting the fastest, highest, or the most powerful the sport has to offer. For shooters it's the fifty caliber. The .50 Browning Machine Gun cartridge is the most powerful of the small arms cartridges. Shooting this heavy machine gun cartridge from conventional rifles is a new and unique sport. The uniqueness and the ability to pioneer in a new sport is an attraction for many. I won't try to hide my penchant for big bore guns, but it's the recent and rapid precision advancements that hold my interest in .50 caliber shooting.

It's really quite surprising most activity with fifty caliber rifles has taken place in the last ten years. The .50 BMG cartridge has been around since the 1920's. The slow development in fifty caliber sporting rifles may be a result of sporting small arm developments being driven by hunting needs. Needless to say, the .50 BMG is a cannon compared with other small arms. I want to dispel this perception. When one spends time loading and shooting the .50 BMG they eventually come to realize that it's identical, in every respect except size, to any other small arm cartridge. When you have experience loading and shooting a 20MM, as I have, then you'll begin to accept the small arms classification of the .50 BMG cartridge.



.50 Caliber benchrest rifle: McMillen M87 action, H-S Precision barrel, Six Enterprises heavy benchrest stock, Leupold Ultra 16X scope, K & P muzzle brake, K & P gunsmithed.

Only since the advent of the Fifty Caliber Shooters Association in 1985, has the .50 BMG become a benchrest competition cartridge. This cartridge has rapidly proved its precision capability. In only eleven 1000 yard matches held to date, we have recorded sixteen groups under 1 MOA (less than 10.47"). Regional matches average about ten competitors, and national matches draw 30 to 35 shooters. Our record group is currently held by Skip Talbot of Fallon, Nevada at **4 1/4** inches. Our record five target aggregate is **11.525"** held by Bruce Seiler of Edgewater, Maryland. Our records are incomparable to those of the Original Pennsylvania 1000 Yard Benchrest Club, since we shot five shot groups, and theirs are ten shot. Their ten shot record of 4 3/8 inches, by Earl Chronister, is a higher precision achievement than our five shot record of 4 1/4 inches, but we are rapidly approaching their level of competition. Remember also, the Pennsylvania shooters have been at this game for over 20 years. Our experience stretches only a six year span.

The .50 Caliber Long-Range Advantage

Let's take an objective look at what it takes to make a great long-range benchrest rifle. There are many attributes of the equipment one can examine. Stock design, caliber, velocity, bullet construction, bullet ballistic coefficient, recoil, scopes, and bag design are just a few of these attributes. To design a competitive rifle one needs to sort out which of these attributes are the important ones. Ballistic coefficient must be placed among the most important attributes. High ballistic coefficients give the fifty caliber bore an advantage over smaller bores.

To understand this advantage one needs to know that the **maximum ballistic coefficient (BC) obtainable for any caliber is proportional to the caliber times the density of the bullet's material of construction.** Using a simple example, this says the highest BC .50 caliber bullet one can construct will have twice the BC of the highest BC .25 caliber bullet. We have recently produced, with the help of Bill Davis, a .50 caliber 800 grain VLD bullet with a BC of 1.0 (G1 function). For comparison, the .308 Sierra 250 grain MatchKing has a BC of 0.7.

So, what difference is there between a bullet with a BC of 0.7 versus one of 1.0? In terms of wind drift that difference means a lot. If one fires a .308 250 grain MatchKing at 3000 fps, it will drift 52 inches over 1000 yards with a 10 MPH crosswind. The .50 caliber VLD has the same drift when it's fired at only 2240 fps. I've fired this bullet at 2900 fps from my .50 BMG Improved. At this velocity the drift is 34 inches; which is 18 inches or 35% less drift than the .30 caliber bullet! Even if we could launch the 250 grain .308 at 4000 fps, it would still drift 35 inches under the same conditions. For an example that's closer to home for most readers, let's see what a 70 grain 6MM bullet (BC=.26) will do under the same

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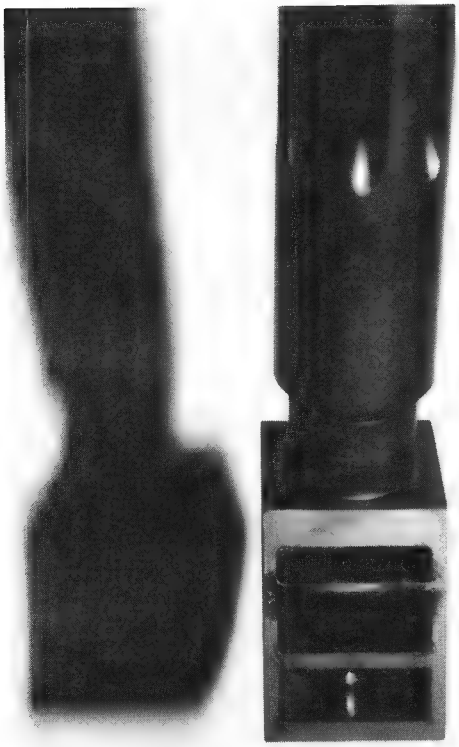
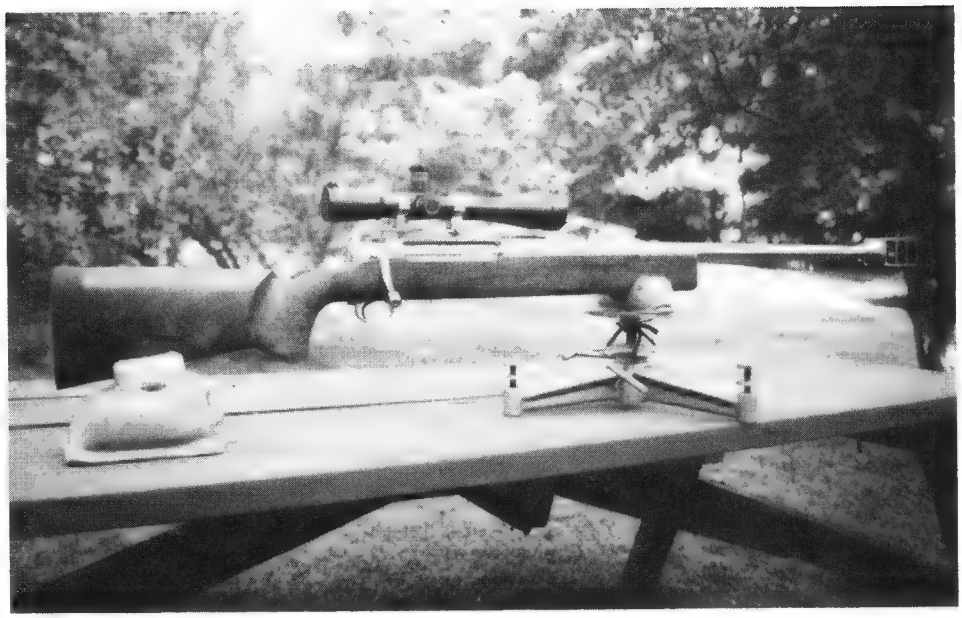


K& P clamshell muzzle brake with exit cone.



Standard McMillan M87 rifle. Production class in FCSA competition.

conditions. At 4000 fps the 6MM drifts a whopping 143 inches. Even at 5000 fps the drift would be 107 inches. In fact, there is no velocity where the 6MM bullet can come close to the wind bucking ability of the .50 caliber. The message is **one cannot greatly reduce the wind drift of a bullet with a poor ballistic coefficient by increasing velocity.**

When trajectory is not a concern, then the highest BC bullet (which usually means the heaviest) for any caliber will be the best choice for long-range shooting. It's wind drift one needs to be the most concerned about when shooting benchrest. Since shooting is done at a known constant range, we don't care about trajectory. A one-time scope adjustment easily compensates for poor trajectories.

Twenty years ago the Pennsylvania shooters were working with calibers such as the 6.5-300 Weatherby. Later, they advanced through 7 MM's to .30 calibers. Now, the up-and-coming caliber is the .338. If they continue this trend, they too will be shooting .50 calibers.

The Equipment of the .50 Caliber Game

For this article I'm only going to focus on what would be considered state-of-the-art benchrest .50 caliber rifles. Today, one can be built for around $3000. There are several military style fifty caliber rifles sold these days. They are only rarely capable of producing sub-MOA 1000 yard groups. A typical .50 caliber benchrest rifle would look quite similar to one of the .30 caliber rifles fired by the Pennsylvania 1000 yard shooters. Contrary to a popular .50 caliber joke, the guns don't come with wheels. Currently, the McMillan M87 action is the most popular starting point for a fifty bench gun. The M87 is a 2 X 12" round action with a milled bottom flat. The bolt is two lugged with the lugs and bolt body of the same diameter (1.23"). The action will accept all Remington 700 type triggers. On my bench gun I user a Canjar LP set at 6 oz.

The Six Enterprise heavy benchrest stock seems to be one of the better handles for a .50 barreled action. Regarding barrels, there are a good number of barrelmakers producing .50 caliber barrels.

Continued on next page

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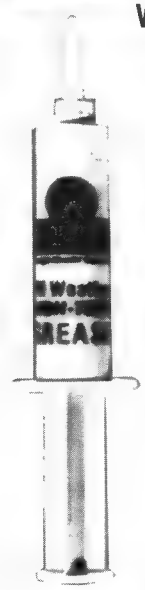

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.50 CALIBER RIFLES

Continued

I've had some very good results with H-S Precision barrels. Some K & P barrels have recently seen their first match shooting, and have done superbly. In one match K & P barrels have claimed our number one (4.25") and two (6.8125") groups.

A unique part to .50 caliber guns are muzzle brakes. With up to seven tons of muzzle energy they are a necessity. The clamshell brake is the most efficient and probably the most popular type used. They are so efficient that it is not a problem to shoot a 50 pound rifle free recoil [Our match rules set 50 pounds as the weight limit.] With most .50 caliber rifles recoil is no problem. The big problem is noise and blast. In fact, with muzzle blast I can clean loose paint from the canopy at the St. Louis Benchrest Club. There is a tradeoff between muzzle brake efficiency and noise. The higher the efficiency, the noisier the gun. A braked fifty should **never** be shot without ear protection.

Muzzle brakes do not seem to have a noticeable effect on precision. The component of recoil that's important to a rifles' precision is the recoil that happens while the bullet is still in the barrel. Muzzle brakes only attenuate recoil after the bullet has left the barrel. The amount a gun moves before the bullet exits is directly proportional to the bullet weight, powder weight, and barrel length. It's inversely proportional to the gun weight, and independent of velocity. For a typical 50 pound rifle firing a 750 grain bullet through a .32" barrel, the rifle will move .078" under free recoil before the bullet exits. For comparison, a heavy varmint 6PPC will move .025" under free recoil. You can imagine if one's bench technique is bad it will show up as a vertical string. It's best to design your stock and bag system such that the rifle remains as close as possible to its original point of aim throughout its recoil travel. If the fifty caliber has a benchrest disadvantage it would be from this aspect of recoil.

Case preparation tools by K & M Services, M & M Engineering, C-H Tools, and H-S Precision.

Several of the Leupold target scopes have been popular in competition. We've had problems with all makes of scopes holding together on .50 caliber rifles. I believe muzzle brakes are the culprits for trashing scopes. The clamshell brakes produce considerable forward acceleration which is preceded by a strong rearward acceleration. Recently, the Leupold Mark 4's are coming into use. They seem to be rugged enough if one can afford their price.

Ammunition

The rifles I just described are essentially the same in design as 1000 yard benchrest rifles of smaller calibers, but

Continued on page 34

M & M Engineering powder measure. Will throw up to 300 grains per cycle.

After all the "techno-babble" and "ballistic-blather", all the shooter really wants is a bullet that works.

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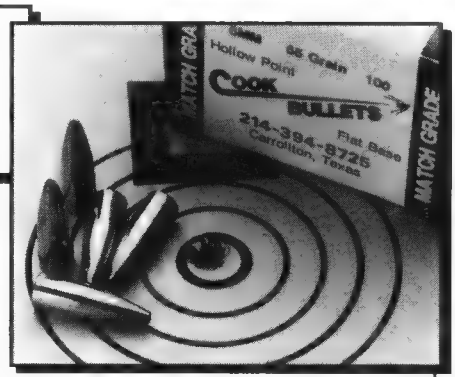

.102" 5-shot Group at 100 yards fired with Cook 6mm's at 1991 Super Shoot

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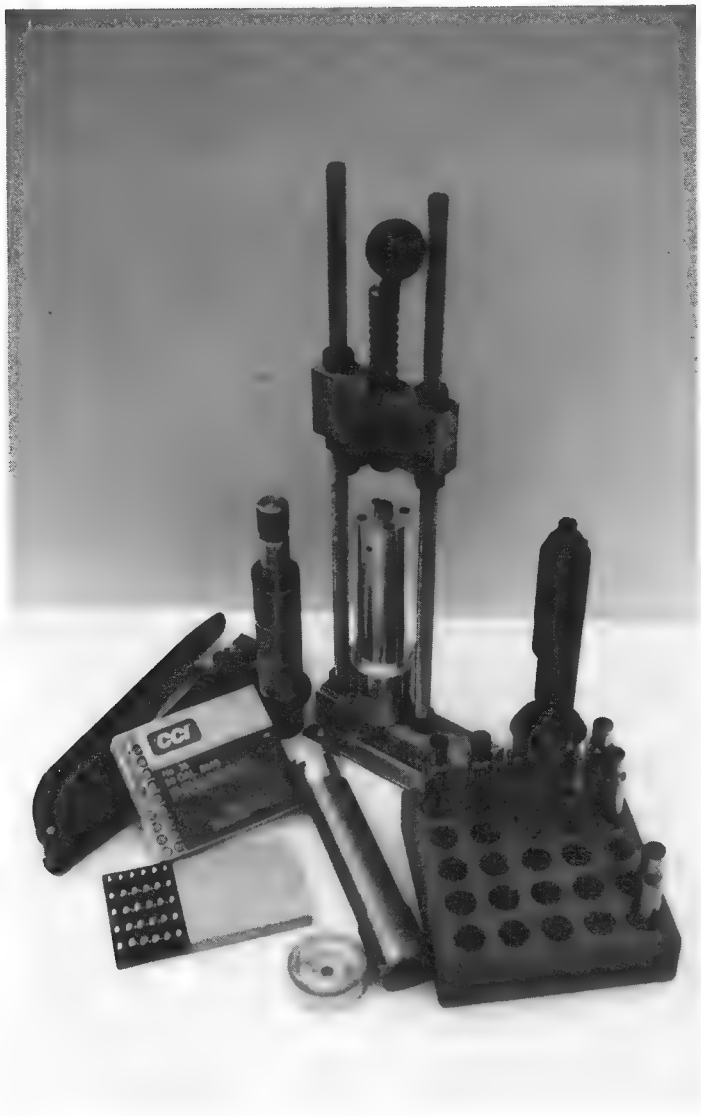
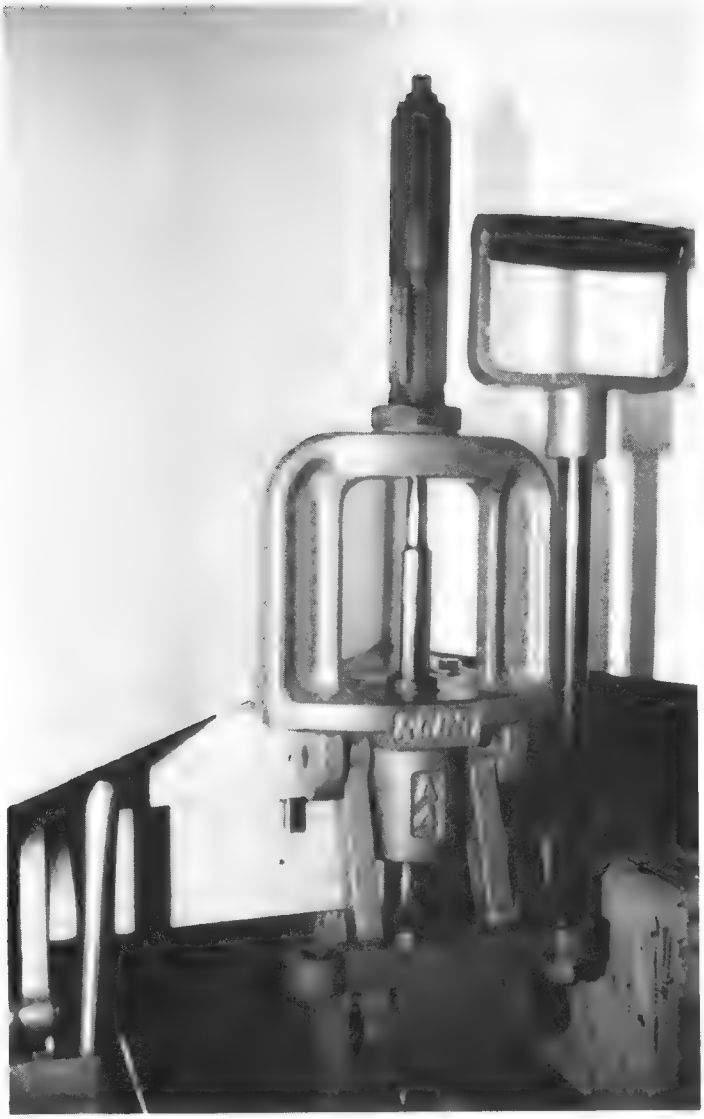


Priming & loading tools. B Square arbor press and Freund custom benchrest dies.



RCBS Big Max press with Vickerman type seating die.

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The fee schedule for clubs for 1992 will be:

Full Page	$140
Half Page	$ 75
Quarter Page	$ 45
One Sixth Page	$ 35

The procedure for requesting ad space is simple. Clearly **print** the details of the match on a 8½″ x 11″ sheet of paper, indicate what size you would LIKE the ad to be, when you want it to appear, and mail it to Precision Shooting, Att: John Gammuto, 27 South Oak Street, Westmont, IL 60559.

Please provide us with enough lead time to see that your ad gets the professional attention it deserves. For instance, if you would like to have your ad run in the July issue, the details of the ad must be in our possession by the end of May.

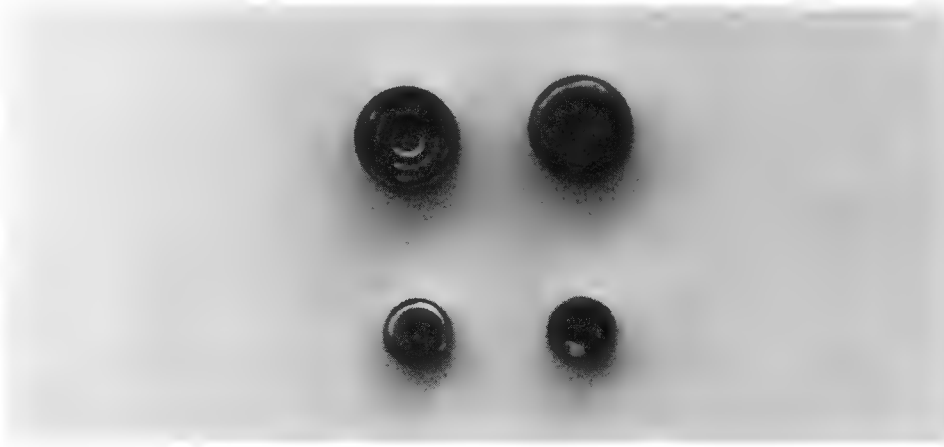
.50 CALIBER RIFLES

Continued

it's with ammunition where larger differences are found. Several differences are: The use of homogeneous solid bullets, different sized primers, military brass, and powders considered slow for smaller rounds are usually too fast for the .50 BMG.

For similarities, all the steps involved in precision handloading the .50 BMG are the same as those used for smaller rounds. Primer pocket uniforming, flash hole deburring, neck turning, sorting, and loading on benchrest dies are operations for which tooling is available. Taking these steps can produce some benchrest quality brass from military stock. I sincerely thank people like Ken Markle of K & M Services, and Joe Mueller of M & M Engineering for supplying such tools on a low demand basis.

With the standard .50 BMG round, we have seen two wildcats perform in competition. One is the .50 BMG Improved that I use. This is simply an Ackley style improvement having a 40 degree shoulder. It was designed by John Ross of St. Louis, and has 10% greater capacity than the .50 BMG it's created from. I'm able to fire standard fifty ammo in this chamber with good accuracy. With the right powder I can get a 150 fps advantage over the .50 BMG. The newest wildcat is a design by Skip Talbot and Lynn McMurdo. It's a shortened version of the improved case called the .50 FCSA (named after the Fifty Caliber Shooters Association) with 85% of the capacity of the .50 BMG. There is a good reason for choosing either of these wildcats over the standard round, and it has to do with powders. There are not many powders to choose from in the very slow burning rate range needed for the fifty. IMR 5010, WC 870, WC 860, and T5070 are all similar in burning speed. When these are loaded into a standard .50 BMG with a heavy bullet, loading densities are too low for consistent ignition. There is one powder that has only 80% the burning speed of



Comparison of .50 caliber and large rifle primer.

Cartridges of FCSA benchrest competition. .50 FCSA with 700 grain Bieber Ledloy bullet, .50 BMG with 750 grain TCCI, .50 BMG Improved with 800 grain VLD (l to r).

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the above mentioned numbers. It's T570, and it's not the same as the old H-570 because it's much slower burning. With this powder you can stuff a .50 BMG case full, and still be below optimal velocities. Now you can see where the two wildcats fit it. They achieve optimal loading densities with available powders. The big problem for the .50 Improved lies with the short suppy of T-570. I feel the .50 FCSA will be a leader in the future, especially, now that it owns the small group record. It doesn't seem to suffer much in velocity compared to the standard round. Both rounds will do about 2850 fps with a 700 grain bullet.

Bieber 700 grain solid, .308 250 grain Matchking, 800 grain VLD solid bronze.

6MM BR and an 800 grain VLD.

I need to say something about bullets, because we have learned some lessons here that smaller arms have taught us. The lessons have come from using solid bullets. There are technical reasons, some I don't have time to go into, why solids are preferred over the conventional jacketed variety of bullets. One advantage is that a turned solid is perfectly concentric, and one need not be concerned about jacket concentricity. The big difference in using a solid is that it will not obturate or swage down as easily as a lead cored bullet. This means the bullet and barrel must be matched dimensionally. It's easy to guess what happens if the fit is loose; accuracy suffers. If the fit is too tight, then pressures and fouling go up rapidly. Additionally, I've heard of bores being worn out in fewer than 100 rounds by using tight fitting solids. Bores that have been worn from solid bullets

Continued on next page

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.22 Cal. 55 Grain $10.00/100
.22 Cal. 60 Grain $10.00/100
.22 Cal. 62 Grain $10.00/100
.22 Cal. 65 Grain $10.00/100

6MM 60 Grain $10.50/100
6MM 62 Grain $10.50/100
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6MM 70 Grain $10.00/100
6MM 80 Grain $10.00/100
6MM 95 Grain VLD $9.60/80
6MM 105 Grain VLD $9.60/80

.25 Cal. 82 Grain $13.00/100
.25 Cal. 85 Grain $13.00/100
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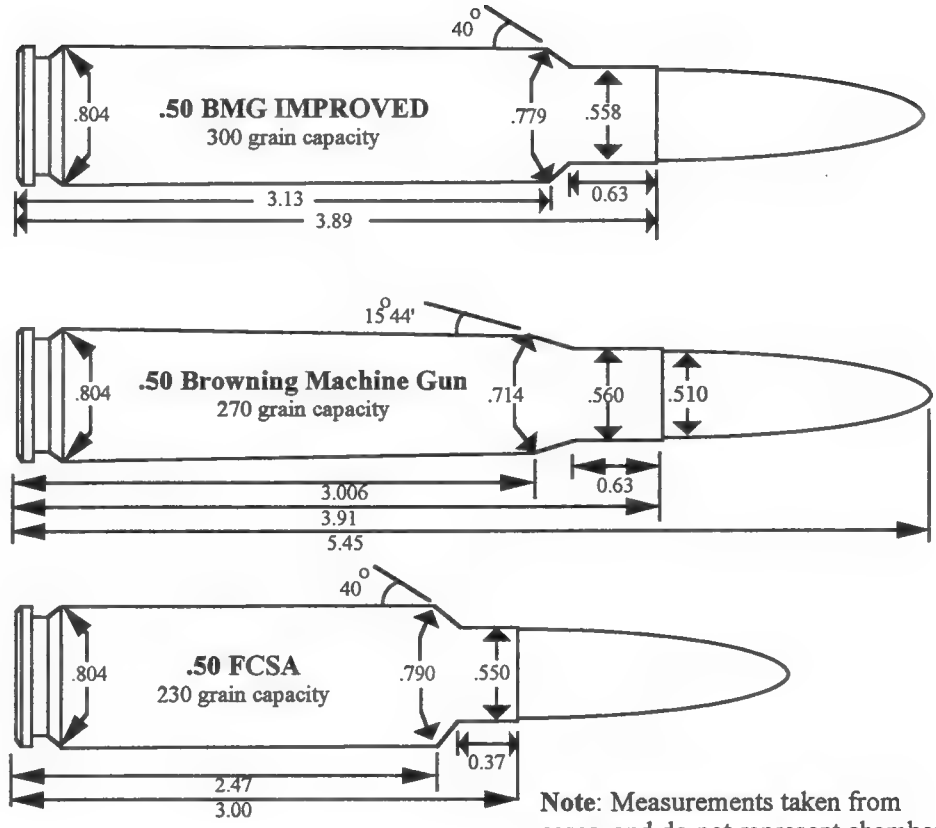
.50 CALIBER RIFLES

Continued

will sometimes have the rifling swaged out such that the bore is smooth near the throat. Bores commonly bcome tapered after shooting a number of solids with the throat becoming bigger than the muzzle. Even with these problems, solid bullets will probably be the preferred projectiles among .50 caliber benchrest shooters. We are now experimenting with bore hardening treatments that should decrease both wear and fouling.

I've noticed with many loads using solid bullets that by varying seating depth the group size changes only slightly. This may be because the bullet does not obturate or deform on engaging the rifling. By not deforming the bullet will maintain its concentricity and accuracy potential. I've heard mixed reviews on using solid homogeneous bullets in smaller calibers. Often, the preference is strongly for or against. Success or failure may be due to bore fit alone. This is a factor many small caliber shooters ignore.

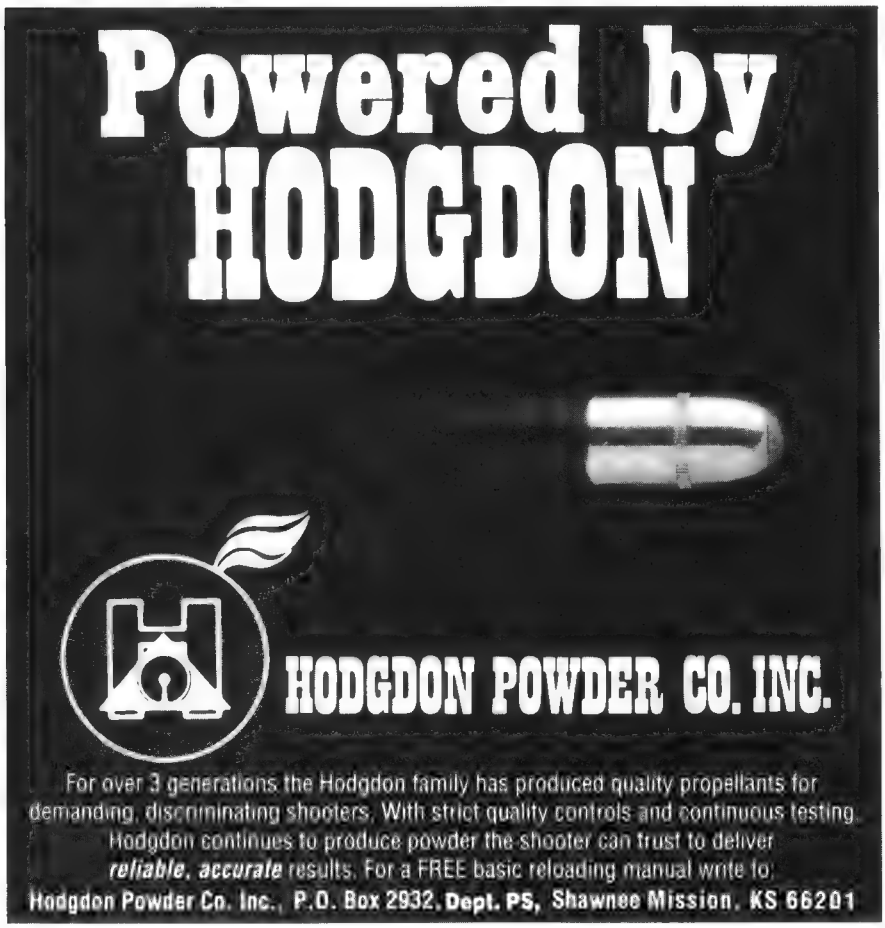
One other factor needing the 1000 yard shooters' attention is velocity extreme spread. It doesn't mean a lot to short range benchrest shooters, because they'll probably never notice its effect.



Note: Measurements taken from cases, and do not represent chambers accurately.

Dimensions of .50 caliber cartridges.

For .50 caliber bullets (BC=.82) fired with an average velocity of 2900 fps and an extreme spread of 40 fps, the vertical dispersion will be 8 inches at 1000 yards. At 100 yards the dispersion will only be .05 inches. Therefore, we watch chronographs closely.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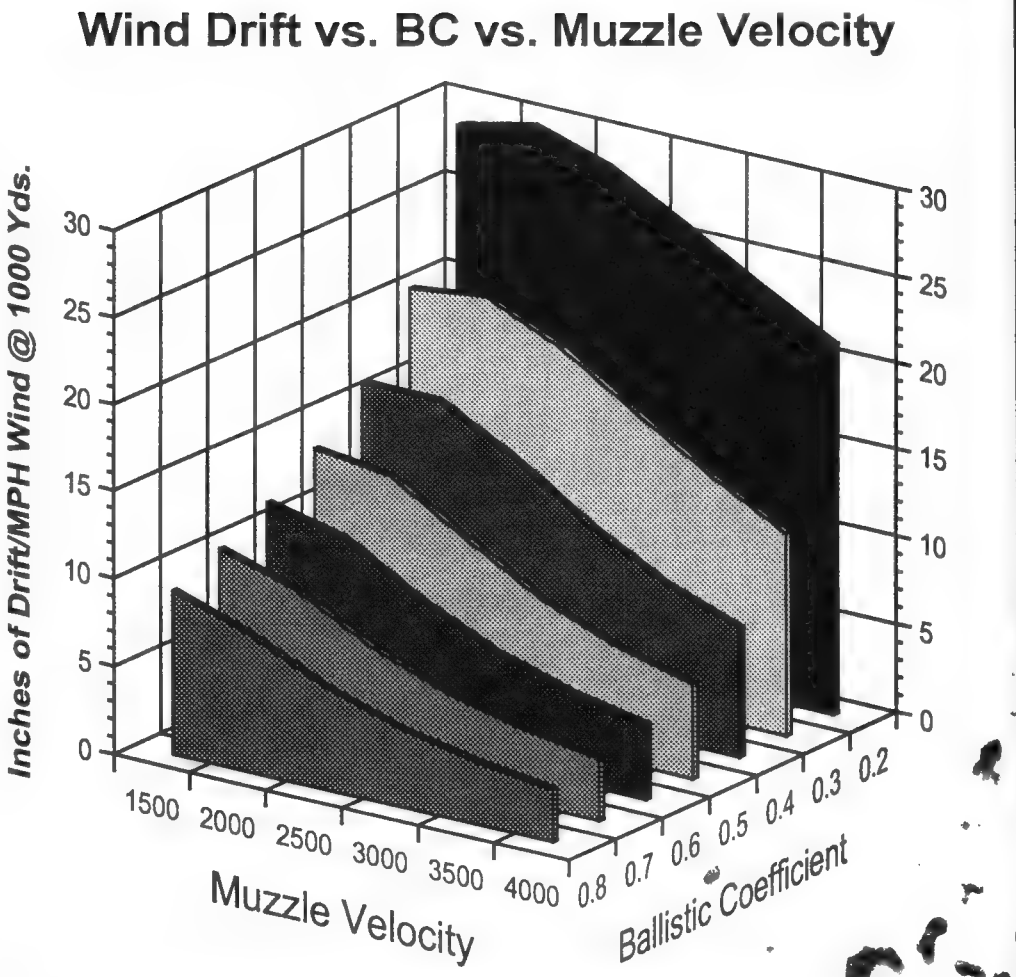
Conclusion

We're still on the learning curve with this sport. It's similar to where varmint class shooting was before the 6PPC was discovered. There will be advances in bullet design, barrel treatments, and powders giving hope for continuing progress. Once the .50 BMG becomes more accepted as a sporting round, we'll see more involvement and with it greater achievements.

I should enter my .50 caliber rifle in a NBRSA unlimited match someday. It would be fun for everybody except for the guys on adjacent benches. Then again, maybe I shouldn't, because a rule change would probably result to outlaw fifties. After that unlimited class would have to be called semi-unlimited. Don't laugh; we've already been outlawed from the Williamsport 1000 yard matches. In fairness, the Williamsport people have been very good to our organization in allowing us the use of their range for our sanctioned matches. The Williamsport range is the best 1000 yard benchrest range in the country.

The FCSA Organization

Anyone interested in this growing shooting sport may want to join the Fifty Caliber Shooters Association. The association publishes a quarterly newsletter (about 24 pages), and sanctions matches. We also provide a list of suppliers to members. Dues are $20 a year. Send to: FCSA, 11469 Olive St. Rd., Suite 50, St. Louis MO 63141.



Graph showing the strong dependence of wind drift on ballistic coefficient.

Our 1992 National Match will be held at the Original Pennsylvania 1000 Yard Benchrest Club, Williamsport, PA June 20th & 21st. If anyone wants further information on this match call me at 314-298-9858.

The author.

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RANGE DIRECTOR: Mr. Al Kogoy

The WAP-WALL-OPEN PRO SCORE SHOOT is a non-registered match. By the directive of the range owner, each association will receive $1.25 per shooter. The match will be scored with the IBS scoring plugs and the time limit will be 7 minute matches as used by NBRSA.

CLASSES: HUNTER — must conform to IBS or NBRSA rules
VARMINT-HUNTER — must conform to IBS rules
VARMINT FOR SCORE — must conform to IBS or NBRSA light and heavy varmint rifles

COMPETITORS LIMITED TO 2 GUNS — ONE 6X HUNTER OR VARMINT-HUNTER AND ONE VARMINT FOR SCORE

Saturday, May 2, 100 yards, starting time 8:00 AM weather permitting
Sunday, May 3, 200 yards, starting time 8:00 AM weather permitting
SHOOT WILL BE LIMITED TO 4 RELAYS (220 Guns)

AWARDS: 5" participation patch for each shooter

Range Aggs each class each yardage

1st	$100 plus trophy
2nd	$ 50 plus trophy
3rd	$ 25 plus trophy

Grand Aggs each class

1st	$500 plus trophy
2nd	$400 plus trophy
3rd	$300 plus trophy
4th	$200 plus trophy
5th	$100 plus trophy

2-Gun (Hunter or Varmint-Hunter PLUS Varmint for Score)
Trophies 1st thru 5th place
Cash — 1st thru 15 place
$25.00 2-GUN fee will be a 100% return to shooters

Merchandise will be divided equally between Hunter/Varmint-Hunter and Varmint for Score classes. Competitors who win $300.00 or more will NOT be eligible for merchandise prizes. Merchandise will be available only to grand agg competitors. Must be present to receive merchandise awards.

Rotation — 55 benches in use; rotate 11 benches match 1 thru 5

PRE-REGISTRATION: BY MARCH 21 — ALL 2-GUN COMPETITORS
BY MARCH 21 — SHOOTERS DOUBLING ON EQUIPMENT MUST REGISTER AND PROVIDE APPROPRIATE NAMES TO THE ORGANIZERS
BY APRIL 10 — ALL SINGLE GUN REGISTRATION

PRE-REGISTRATION WILL BE REFUNDED THROUGH APRIL 15. AFTER APRIL 15 ALL FEES ARE FORFEITED.

COST: 1 gun; 1 day — $ 50.00
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ABOUT THE RANGE: Covered reloading area contiguous to the benches.
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VENDORS AND DEALERS: An area has been set aside for a "Commercial Row" adjacent to the range and reloading area. Space for setting up displays is NOT AVAILABLE in the reloading area, and anyone planning to set up a display should contact Mrs. Linda Palmisano at (717) 379-3663 immediately.

ACCOMMODATIONS: The motels listed below are offering a special rate to attending competitors. When you call or write, advise the hotel you are competing in the WAP-WALL-OPEN PRO SCORE SHOOT, and you will be advised of the appropriate rate.

COMFORT INN - Route 93 and Kiwanis Blvd., West Hazleton, PA
In PA — 800-672-3800; Elsewhere — 800-255-1762

FOREST HILL INN — Route 93; West Hazleton, PA
(717) 459-2730

LOOKOUT MOTOR LODGE AND RESTAURANT — Route 93; Drums, PA
(717) 788-4131

SUPER 8 MOTEL — Route 93 and I 80; Conyngham, PA
(717) 788-5887

All the motels are within 12 miles of the range and have restaurants nearby.

For further information or registration contact: Mrs. Linda Palmisano
P.O. Box 188
Wapwallopen, PA 18660
Telephone (717) 379-3663

Preregistration is required. Registration limited to 220 guns. Payment must accompany registration. No phone registrations. Total refund on cancellations to April 15. No refunds after April 15, 1992. This is a result of having to tell shooters that we were full and then having no shows the day of the match. A $10.00 fee will be charged for caliber or class changes made the day of the match.

_____Hunter _____Caliber
_____Varmint-Hunter _____Caliber
_____Varmint for Score _____Caliber

Signature _____
Name _____
Street _____
City _____
State _____ Zip Code _____

WHAT DID I SAY? WHAT DID I MEAN?

by

Marmota Monax

The mail just arrived and what to my wondering eyes should appear (Editor: I certainly will be glad when the holiday season is past ...) but a letter from the Ye Old Editor. You must understand, that when one writes for PS, receiving a letter from the Editor is like getting a letter from the IRS. One hopes its good news (like an unexpected refund) but more often than not, its an audit announcement. With trembling hands, I opened the letter and found that he was forwarding on to me a letter from a subscriber that had some questions and would I please — make myself clear.

Frederick J. Blazowski, from Hickory Hills, Illinois wrote to the Editor that he is a new subscriber and enjoyed reading the October Editorial (one can learn from this that it always helps to compliment the Editor) and that he read **"Mr. Faul's articles articulating shooting 'eastern(?)' woodchucks with his associates. I found them entertaining but I don't understand his problem using Sierra Blitz bullets in high velocity .22 centerfire cartridges".** Well it seems you're not alone Frederick, the world as a whole seems to have come up with the same question. I have heard from readers directly, the esteemed Editor (oh my God yes, the Editor) who has heard from readers, even the Pres. has heard from folks that have read PS and passed their comments on to me through him.

So here goes! Let me see if I can clarify my position to the point that folks understand what I was trying to say or at least come to the conclusion that this particular topic has had enough ink wasted on it so we can go on to the next.

In the October, 1991 issue I made one tiny, little observation concerning an article that appeared in the July issue on "Marmota Flaviventris" by Steve Hanson in which he suggests loading the 220 Swift with 55 grain Sierra Blitz bullets at 3,844 fps. This innocent comment, given with the best of intentions, it seems is the stick that has stirred up the hornets nest.

First of all, let me say that the 50 and 55 grain Sierra Blitz bullets are one great bullet design available in two weights. I have used and will continue to use the Blitz in my 223 for all my "short range" work — meaning less than 300 yards. I highly recommend it in the 222, 222 Rem. Mag., 223, and 22 PPC.

What I said is that I do not suggest using the Blitz, or any other similarly designed bullet by other bullet manufacturers — i.e. the Hornady SX or Speer TNT etc., without great caution in load development in the 220 Swift. Why?

Reason No 1. All 22 caliber super explosive, frangible varmint bullets, both in 50 and 55 grains, are specifically designed to operate at 222 and 223 velocity levels (approx. 3,000 to 3,350 fps). Top velocity for the these types of varmint bullets is about 3,600 fps, but this can vary considerably, depending on the interior finish of the bore and the rate of rifling twist. But usually on the down side, very rarely on the upper side of this velocity figure. Steve Hanson, in a follow on issue of PS, acknowledged that he believed his Swift barrel was very smooth (meaning well lapped, uniform, without any burrs or unevenness) and thus he was able to use the Blitz.

Reason No. 2. Read the information printed on the Sierra package containing bullets #1340 (50 grain Blitz) and bullets #1345 (55 grain Blitz). They says "Med. Vel." — meaning medium velocity. Why do you suppose the manufacturer puts this information on its packaging?

Reason No. 3. Read the reloading manuals. Sierra only gives loading data for its two Blitz bullets for the 222, 223, and 222 Rem. Mag. Again, I think the manufacturer is trying to tell us something.

Reason No. 4. Personal experience. At the time I wrote the article for the October issue, I had not tried either Blitz in a Swift; but knew from personal observation that often the 50 grain Blitz bullet does not make it to the target at 100 yds out of a 22-250 (3,650 fps), it tended to at best be unstable and at worse disintegrate in flight (whether this is from sheer velocity or rotational force I'm not sure). Not to be closed minded however, I loaded the 50 grain Blitz in front of the Pres.' hottest Swift formula (this load is not rec-

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ommended to anyone for any purpose) and went to the range to see what would happen. I was shooting my Remington 40X in 220 Swift with the factory stainless steel barrel. This load has been known to push 50 grain bullets to 4050 fps. I didn't used a chronograph, since I was positive the velocity would be above any 22-250 velocity. Well, I fired three shots. One was ok. One keyholed. I have no idea where the third shot went — it was not on paper. I presume that as the barrel fouled things were not ideal to push the Blitz as fast as this load was obtaining.

Reason No. 5. Other writers experiments. An excellent article on super explosive varmint bullets was written by Rick Jamison in the August, 1991 issue of "Shooting Times". His conclusions were to restrict the use of super explosive varmint bullets to the 222 and 223, not the 22-250 or the Swift.

Reason No. 6. I see no reason to throttle back on a Swift. I want to shoot my swift to its maximum capability and to do this consistently in the field all day long. I want a bullet that will hold up, all the time. Sierra makes several varmint bullets that will do this. Specifically, the 55 grain SMP (Semi-Pointed) Varminter #1350 and the 55 grain SPT (Spitzer) Varminter #1360 (mine and the Pres's favorite). The Nosler 50 grain ballistic tip is also one great bullet out of the Swift. At Swift full throttle velocities, why do I need a bullet designed to be used a much lower velocities. I've never seen the Nosler BT or the Sierra 55 grain Spitzer fail. I do not mean by this that one should use match bullets for varmint hunting. I have had some trouble with my 243 Ackley shooting match bullets. Stick to the bullets listed by the manufacturers for loading data with the Swift.

If after all this, one of our readers still wants to shoot the Blitz, SX or TNT in a Swift, I must quote Ret Butler: "Frankly, Scarlet, I don't give a $%#@&*". Each to his own. But please do some careful load development.

In conclusion Dave, let me explain what an "Eastern Woodchuck" is. Or more specifically why I used the term. I was attempting to be more clear in my writing than using just plain Hog, Chuck, or Whittle Pig; since these terms could also be used for the Western marmot or Rockchuck. Marmota Monax is not the same animal as Marmota Flaviventris. Although they are closely related, both being marmots and rodents. Marmota Monax ranges in the eastern U.S. and Canada. Marmota Flaviventris ranges in the western U.S. and Canada. Monax tends to be a solitary animal except at mating season. He is very territorial. Flaviventris is more sociable usually living in extended family groups. Monax tends to be a little bigger — you should see some of our farm fed beasties. Hunting strategies are much different. Boyd Mace or Rich Kayser are the folks to ask about hunting Flaviventris. I restrict myself to Monax. Monax is a crafty old devil — but more on this later.

I'll let you know how the next trip turns out.

Jerry Wm. Faul

POST SCRIPT

Dear Dave:

Well, so much for an uninformed opinion by a self proclaimed "expert". On the way home the day after I mailed you my most recent article on the use of super explosive varmint bullets, I stopped at the local gun shop and purchased a copy of Sierra's Rifle Reloading Manual, 3rd Edition.

The 3rd edition is somewhat different than the 2nd edition concerning the topic of using the 50 and 55 grain Blitz bullets. After reviewing the most current Sierra publication, I must confess that I was not totally accurate (a much more desirable way of saying "mistaken") and must modify my third reason for not recommending the use of the Blitz in the 22-250 and 220 Swift, as follows:

Revised Reason No. 3. Read the reloading manuals. Sierra does give loading data for its two Blitz bullets for use in the 22-250 and the 220 Swift; but recommends it only for use in the 222, 223, and 222 Rem. Mag. On page 101 the manual states "BLITZ This rifle bullet has a specially-designed, progressively-drawn, thin-walled jacket and is recommended for .224 caliber centerfire rifles at medium velocities. If used in rifles with "rough throats", at maximum velocities, the shooter could experience bullet blow-up prior to reaching the target." Recommendations are given by Sierra on page 106 by stating: "50, 55 grain Blitz These varmint bullets have the classic Sierra shape which insures deadly accuracy and flattest trajectory. The special thin-skinned jacket is designed for total destruction on contact. Recommended specifically for the .222 Remington and .222 Remington magnum cartridges..." "Most effective muzzle velocity: 2600 to 3600 fps." Optimum range: 50 to 350 yards." The 55 grain Spitzer Boat Tail and the 55 grain Hollow Point Boat Tail bullets are both recommended for the most effective velocity for accuracy and expansion at between 2700 to 4000 fps. Hornady lists a recommended velocity of between 2100 - 3600 fps for the 50 and 55 grain SX bullets for optimum usage and performance. Again, I think the manufacturers are trying to tell us something.

I hope again that we can now let this subject rest. Oops, I just noticed that I have an outdated Hornady manual.

I'll let you know how the next trip turns out.

Jerry Wm. Faul

(Editor: You keep screwing up like this, Faul, and we're gonna have to start up that keel-hauling discussion again!).

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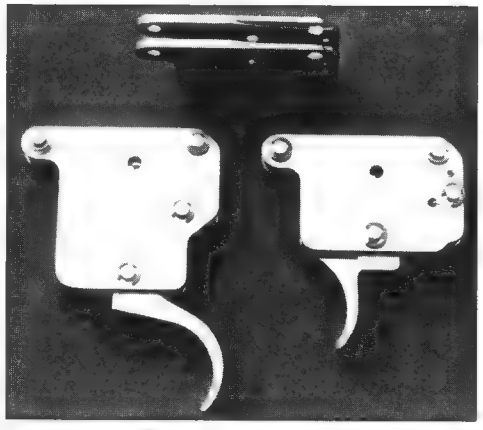

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WHY WOULD ANYONE WANT A BULLET THAT TRAVELS AT 4,020 FEET PER SECOND?

By Todd A. Kindler

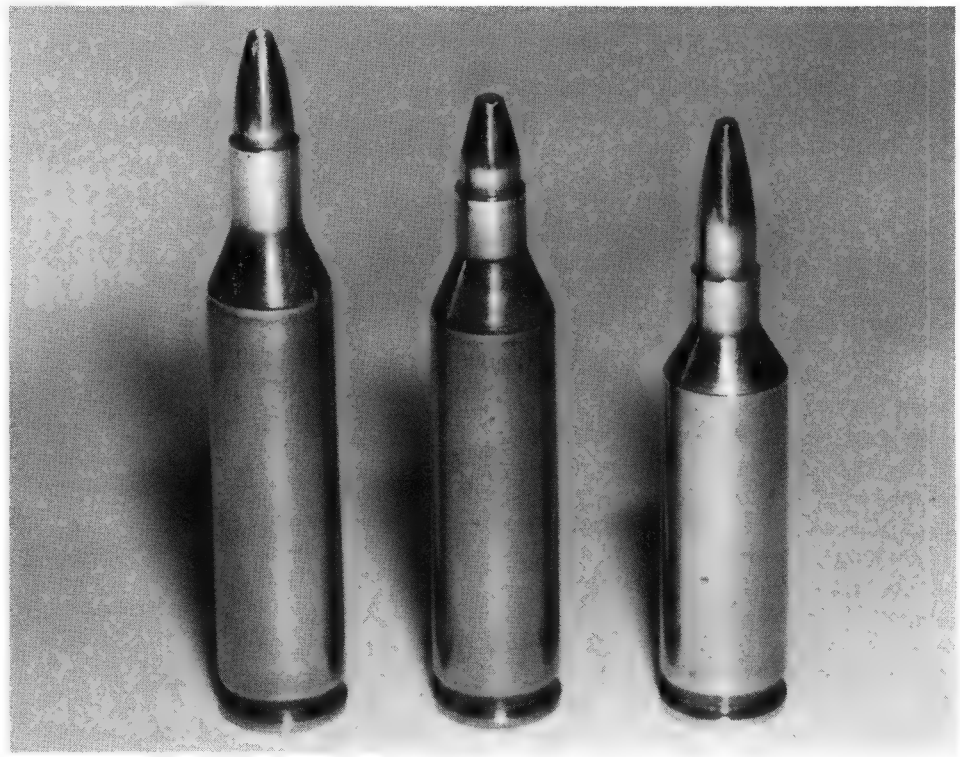
Remington Arms Company asked that question in one of their continuing series of Remington Reports that were in different shooting magazines in the early 1970's. They want to answer that question and show their new Model 700 BDL chambered in 17 Remington. Also shown was a factory loaded 17 Remington cartridge and the actual muzzle size of a 17 caliber barrel. They claimed with improved firearms technology that the trend was "toward smaller calibers and higher velocities", and the then new 17 Remington could push its 25 grain bullet at 4020 feet per second. This made it "faster than any other factory-loaded cartridge on the market!" Also it was noted that at 100 yards it was still traveling "faster than many standard loads do when they leave the muzzle". Now that is something to think about whether you are shooting a 17 Remington or any other 17 caliber cartridge that is pushing its bullet close to 4000 f.p.s. My 17 Mach IV pushing a 25 gr. Berger bullet at 3950 f.p.s. at the muzzle will still be moving at 3400 f.p.s. at 100 yards according to my Silhouette Ballistics program.

The ad also stated that "within limits, a small bullet traveling very fast can be as effective as a larger but slower bullet." Besides stopping power Remington felt that their new 17 Remington had the *"potential for greater accuracy"* something a varmint hunter desperately wants!

This past year was the 17 Remington's 20th birthday and for the first time I had the chance to work with one in various ways. Did it live up to all those claims? Well, yes and no. Furthermore, I would like to try to answer Remington's question, "Why would anyone want a bullet that travels at 4,020 feet per second?"

A varmint shooting friend, Ron, that lives over the ridge from us stopped over several times last winter to discuss varmint hunting and rifles. Ron was impressed with the tiny 17's that I showed him, and he began to come down with a terrible 17 fever. I explained the costs of a custom or semi-custom 17 caliber rifle and the time it would take to build one. Ron really did not have a lot of extra money as he was having a new barrel put on his 22-243 and spring was not too far away. After looking at the different options I suggested he buy a factory 17 Remington. This would be a modest investment in a quality rifle, which he could decide if the 17 was for him.

Several weeks later on a Saturday af-



The 17 Remington, 17-222 and the 17 Mach IV.

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ternoon Ron stopped by with a brand new 700 BDL in 17 Remington. He had made a local gun shop owner an offer and ended up with the rifle. The first thing Ron wanted to change was the trigger. He had become accustomed to his two ounce trigger on his 22-243 and was going to have none of this three pound stuff. So I installed a Shilen two ounce trigger and a new Bausch and Lomb 6 X 24 power scope after lapping the rings. Then I thoroughly cleaned the new rifle inside and out, getting it ready to shoot.

When a two ounce trigger like the Shilen is used in a rifle of this type you must realize that the safety is removed, and it should be used only like a single shot. When you are ready to shoot you put in a round or unload it if you don't shoot. I never carry my varmint rifles loaded, only chambering a round once it is on the field rest and rear bag, when I am ready to shoot.

Ron was soon working up loads with various powders and Hornady bullets. He asked what powder I recommended, and I told him to try IMR 4320 with Berger or Hornady bullets. Once he had several loads worked up, we headed down to the range to do some accuracy and chronographing tests. I took my new Shilen 17 Mach IV along because there is always something different to try, and I thought it would be interesting to compare the two cartridges. It was hot, humid and over 90 degrees that mid June day, and I fired the 17 Mach IV first. My first five-shot group was under 1/2 inch using my old load of H-335 and 25 grain Berger bullets. The instrumental velocity at about 15 feet was 3986 f.p.s. with the standard deviation 10.

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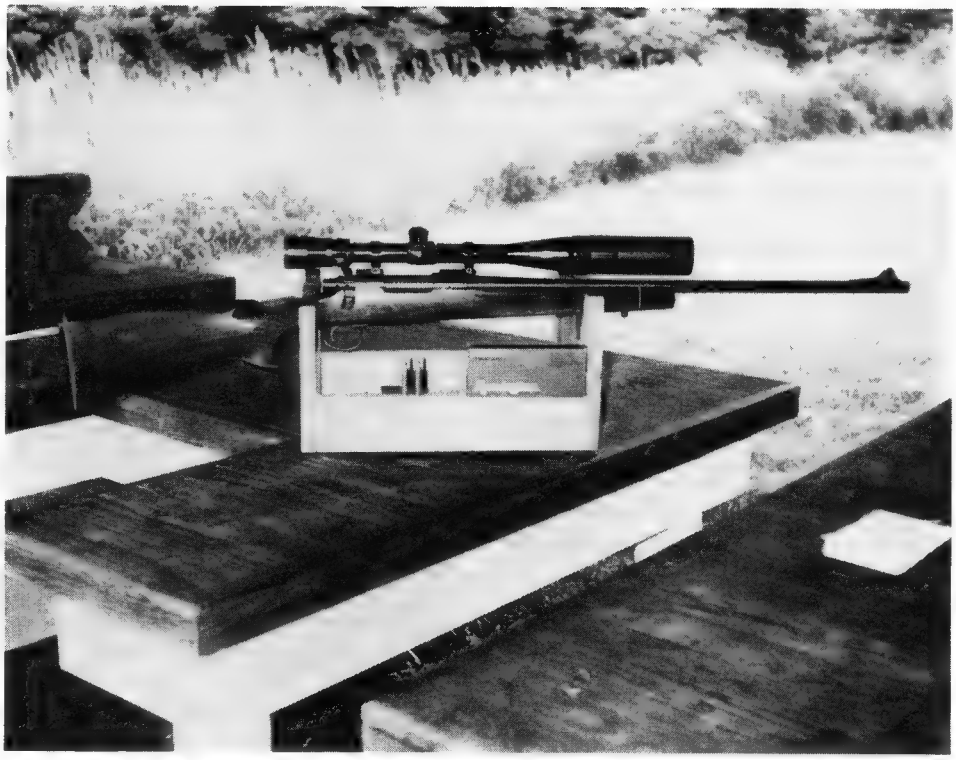

Remington Model 700 BDL with a Bausch and Lomb 6-24 power scope. A box of 17 Remington's ready to test.

Ron shooting his Remington 700 BDL in 17 Remington.

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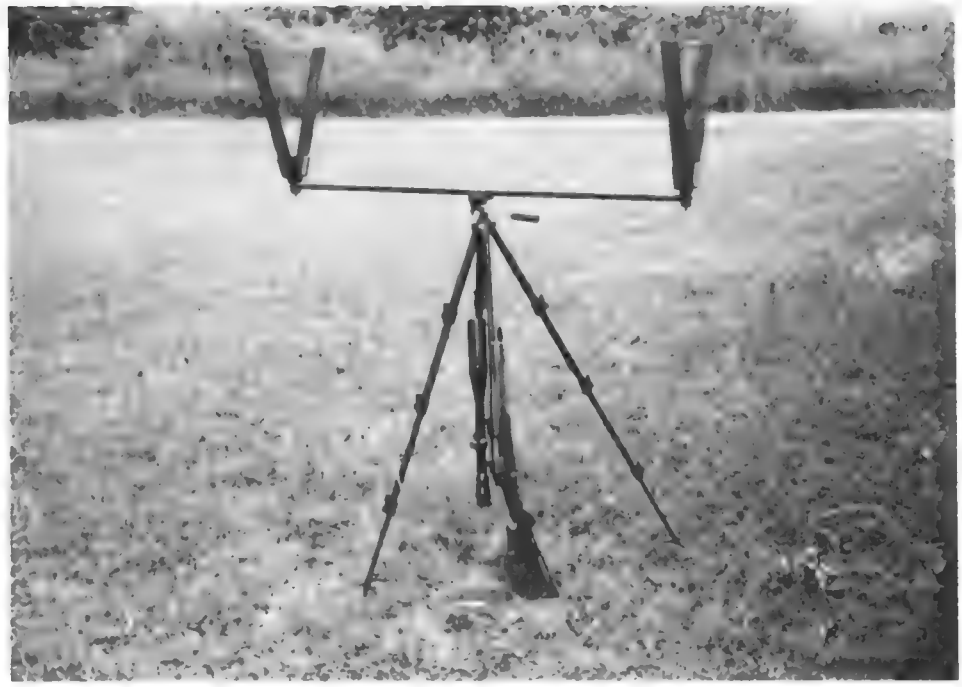
BULLET THAT TRAVELS AT 4,000 FEET PER SECOND

Continued

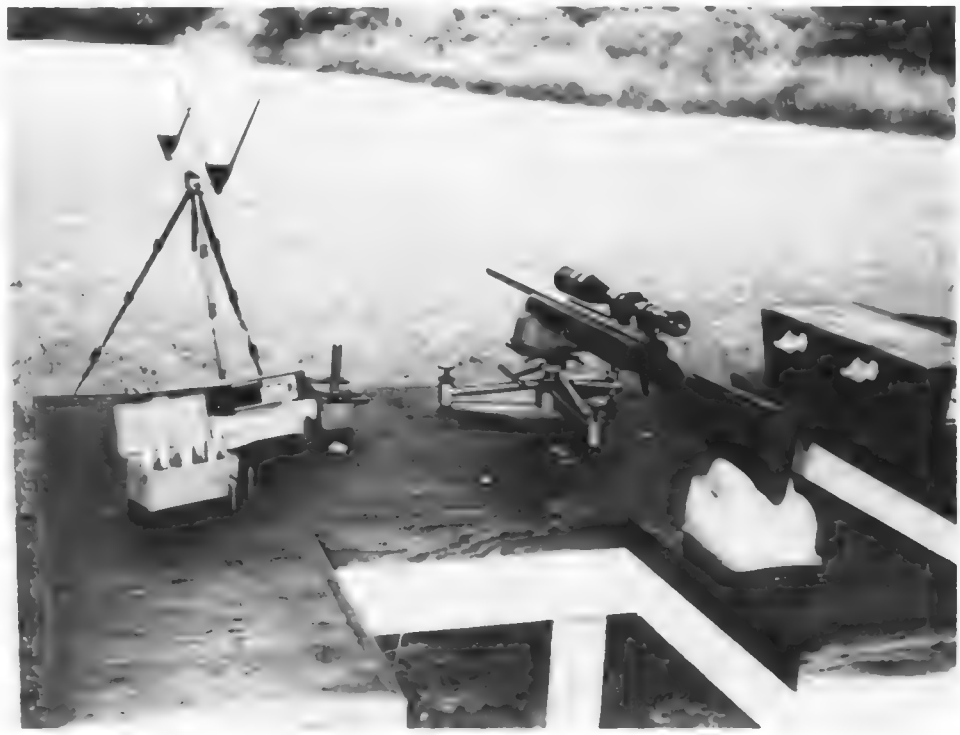
Ron's first group in his 17 Remington was a five shot hummer that was even smaller than mine. It was a good stiff load of IMR 4320 moving 25 grain Hornady's at 4073 f.p.s. Different loads of Reloader 12, IMR 4064 and Hodgdon's 414 were tried but nothing I saw compared with the IMR 4320 load in accuracy or velocity. A quote from Hornady's Handbook of Cartridge Reloading, Third Edition, "The 17 Remington, IMR 4320, and the Hornady 25 grain Hollow Point make an excellent varmint combination." Enough said!

Then we shot a few new factory loads in the 700 BDL factory rifle and what a surprise. The average velocity was only 3844 f.p.s. and accuracy was poor when compared to Ron's handloads. That is 176 f.p.s. less than Remington's claimed velocity and 229 f.p.s. less than Ron's top load of IMR 4320. The factory loads did not pan out but that Remington 700 BDL with custom handloads of IMR 4320 and Hornady bullets sure did.

Ron used it on and off all summer as his close to medium range varmint rifle and his 22-243 Middlested for the real long shots. One late summer evening he called with excitement in his voice. He had shot nine large chucks in our township and just could not believe the power of the 17 Remington. I had told him many times the same story he now was telling me. Ron found out that a small bullet moving very fast is quite effective, and it does things it really should not be able to do. Slamming a large chuck down like it was hit by a baseball bat or a bolt of lightning is amazing considering the tiny bullet.



A lazy 17 Remington Saturday!



My 17 Mach IV ready to chronograph. Those are Ron's 17 Remington's handloads on the left.

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The 17 Remington factory load moving at 3844 f.p.s. is still probably the fastest factory loaded cartridge on the market. Also, I really believe as Remington put it "within limits, a small bullet travelling *very fast* can be as effective as a larger but slower bullet", and I know many other 17 shooters who feel the same way. The 17 Remington with all its smaller 17 wildcat cousins such as the 17-222, 17 Javelina, 17 Mach IV, 17 Jet and 17 Bee do have the "Potential for greater accuracy". It has always been a known fact why bench rest shooters stay with the small, efficient cases, to reduce recoil and total rifle disturbance. I realize ultra high velocity could be maximum disturbance on bullets but the light recoil of the above mentioned 17's help on the other side of the coin.

When Ron and I returned home from the range and pulled up a chair to enjoy some ice tea, we began to look over our targets and velocity readings. After looking it all over Ron looked up and said "You sure are not giving up much shooting the 17 Mach IV". His top load in the 17 Remington was only 87 f.p.s. faster than my top load out of the 17 Mach IV, but both rifles shot very well considering the conditions. I said that is true, but the 17 Remington is a very good case. It may be a little big when using the 25 grain bullets, but the high velocity and accuracy are there. This cartridge may really be a top performer with some of Berger's new 30 grain bullets.

Why would anyone want a bullet that travels at 4,020 feet per second? To answer that question as I sit here right before the Florida State Seminoles and Miami Hurricanes go to war, and they interview a few of the players; one of the players answers the question what he thought would be the difference in the game and he answered, "Speed, speed kills! It is that way nmot only in college football today, but with varmint rifles as well!

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BULLET SEATING DEPTH

Re: Bullet Seating Depth PS (Vol. 37 - No. 7) p. 58

Dear Mr. Johnson:

The Question: Is it possible that seating depth affects group size in some rifles by way of its effect on velocity and barrel time, rather than by significantly changing bullet deformation? It is my guess the pressure exerted against the base of the bullet as the bullet engages the rifling is **critical**. Depending on chamber dimensions, the bullet may obturate into the no-man's land between the end of the case and the beginning of the bore. Seating depth would then vary for each bullet hardness/style.

While fireforming hundreds of cases for the eight Gibbs wildcat cartridges many were formed by firing with the bullet inverted in the case. The base of the bullet was seated tightly into the lands. Many times these fireforming loads turned out to be the most accurate loads developed for the rifle.

After the cases were formed for the purpose of developing load data, the bullets were seated conventionally, off the rifling about .030". Powder charges were increased and fluctuated to come up with safe loads but the accuracy attained during fireforming was seldom duplicated. Accuracy could usually be duplicated if the bullet was seated base into the lands with an already formed case.

Even if I seated a bullet point first into the lands, the base first bullet usually beat it out in the accuracy department. Bullet-bore alignment should have been better with the conventionally seated bullet, but since it wasn't, the relationship between bullet base upset and accuracy seemed evident.

After reading about the work Mann (thanks to Merrill Martin also) had done investigating bullet base upset with cast bullets, it seemed like measuring chamber differences would be an interesting thing to do. After making cerrosafe casts, I made up chamber length plugs for each of the eight Gibbs cartridges to compare the overall chamber length. I found generally the chambers with the biggest gap between the end of the case and the beginning of the bore gave the most improvement in accuracy with the bullet backwards.

It also seemed to me that the smaller calibers, 6mm and .257, showed a much more dramatic accuracy change than the larger calibers, 8mm and .338. The 6mm and .257 cartridges both had the biggest gaps between the end of the case and the bore, about .080", or could it be that heavier bullets are less troubled with minor base upset?

In summary Sinclair International Inc. is now marketing the Chamber Length Gage Inserts, as I designed them, based on an article published in *Handloader* magazine #140. I hope someone with better equipment than my Savage 110 switch barrel rifle can thoroughly check out this chamber length dimension vs. accuracy question of mine.

I have recently had Shaw chamber a barrel in 6PPC for my switch barrel. I am making the PPC cases from 220 Swift brass (20 steps without case forming dies) (Editor: No, I've changed my mind here ... I will NOT make a wise remark about "20 steps". Too bad it's not a wildcat ... we could call it the 6mm Staircase. A 20 step staircase ...) for two reasons. The extractor works good with the standard bolt face, but more importantly, as the cases are made I can extend the neck of the case as long as I wish, in effect headspacing the case on the end of the case neck rather than the shoulder or the semi rim. Once again I don't know if my equipment or I will be good enough to tell the difference when I shoot "long" or "short" cases. At the least a longer case neck should improve concentricity of the loaded round.

Group size is directly proportional to bullet base deformation; don't you suppose the VLD bullet will be a real boon to minor imperfections in rifles?

Sincerely yours,
Roger Stowers
214 Capital St.
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"LOOKING FOR AN ACCURATE 22 RIFLE?"

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A LETTER FROM BOOTS

Bud Salyer

The following is part of a letter I received from Boots Obermeyer earlier this year commenting on the use of 7mm cartridges in 1,000-yard shooting. The letter is too long for one issue, so I will split it up into several parts.

Dear Bud

I read your article in the February PS and am finally moved to respond. I think you and David Tubbs both went in the wrong direction on the 7mm. I had talked to David only briefly about his 7mm Mag project prior to the matches. He was lucky to get a few VLD bullets for it. The problem with 7mm is getting consistent results. We started shooting 7mm's here about 20 years ago. At that time, the major gun was the .30-338 with 190-gr. bullets. The 7mm Magnum with 168's would buy you a couple of inches on wind drift. No one could read it that close except, maybe, Larry Moore. I recall shooting against Ray Dixon at 1,000 yards during the 1970's. He was using a 7mm Magnum. When I got caught outside a score ring, Ray would break inside.

Over the next few years, many of us switched to 7mm's. The Wisconsin/Minnesota area is very competitive, so you must work to stay on top. The 10-ring target was developed there, and we made targets by hand for several years before they were printed. The 10-ring target really demands more than the old 5-ring. The normal barrel was a 1-9, usually 28 inches in 7mm Remington Magnum. We found that although the 168 gr. bullet had an edge on paper, it often gave problems, so the 175-gr. hunting bullet was used quite a lot. Earl Liebtrau held the record at Lodi until 1990 with a 7mm Magnum using 175-gr. bullets. This range is more difficult to shoot than Perry, and I think Ray's record was 200-7X. I broke the record in May, 1990, in the 1,000-yard stage of a Long Range NMC, with a score of 200-12X, using my .308 with an 8-1/2-in. twist barrel with 220-gr. bullets. This was in part due to luck with calm wind conditions. Nevertheless, the rifle had to shoot.

What I have found over the years is that small cases have an edge. Now, certainly there is a place for large cases, but just barely so. The case must work to make the powder produce velocity, with little or no air space. The latter is critical, because primers ignite the powder by shock, not flame. If you have air space on top of a large charge of powder, you will greatly reduce the ignition shock. In the mid-1970's, I worked with Jim Bell on large bore English cartridges. The single most important problem was ignition. It was not uncommon to put 85 grains of powder in a .470 case and have nothing happen. The powder would jell, but not ignite. In some cases you have hangfires and in other cases a wide variation in pressure and velocity. I developed a load working backwards from a full case of very slow powder, some of which is not available to handloaders, until we got one with the correct pressure and velocity with a full case. An interesting test was one in which we used cardboard wads to position powder. We got extremely high pressure compared to the same charge laid flat. Pressure increase was about 20,000 CUP. This points to some of the problems with large cases used elsewhere.

It is my opinion that the 7mm Magnum is a bit too large for the 7mm bullet except when used with IMR 7828. My son Eric shot a 7mm Magnum at Perry with 68 grains of IMR 7828 and the 168-gr. Sierra. He was High Junior in the Leech Cup. The load produces about 3,070 fps. I think it would be wise to cut it back some. The reason is that that may account for your misses. Bullets come apart much more often than people think. Over the years at Lodi, we have been able to observe it often. The

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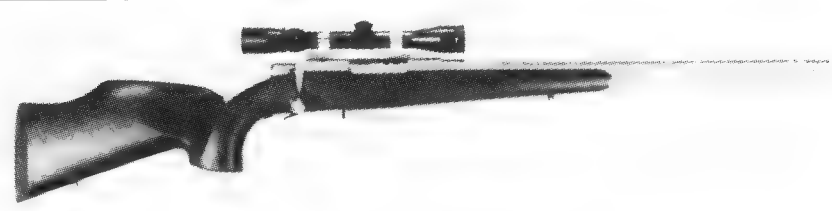

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See Aug 1991 Issue - Precision Shooting

range has a lot of sand and a gentle rise at the butts. When the bullet comes apart, it will often do so at 700 yards or more, so you won't see it too often in short range tests. The old version of the 168-gr. BTHP seemed to do it more often. I recall shooting a 1,000 yard match where one round hit short and the next went over the top. I was clean to that point, so I got up, cleaned the barrel and it shot well after that.

In the last couple of years, I have made some barrels for 1,000-yard benchrest rifles and talked a lot with Bruce Baer. What is of interest is that the .30 cal., 250-gr. BTHP comes apart a lot. After much speculation, one common fact appears, and it matches experience with the 7mm's. As the barrel gets 200-300 rounds through it, you will most likely lose a bullet in any make of barrel. I developed my 5R barrel due to 7mm frustrations in hopes that it would help

Continued on next page

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A LETTER FROM BOOTS

Continued

this problem. It doesn't cure all of them. What most of us have overlooked is the roughness in the throat area from shooting heavy charges. As the throat gets rougher, jacket damage increases.

This was brought home in a painful way at Perry in 1988. It was the afternoon after the Leach, with a 4-man iron-sight match. We were about 6 points in the lead and on the last man. Earl lost a shot that hit the ground about 100 yards out. It was a 250-gr. BTHP. That night, he pulled the 250's and stuck in 220's and went on to win the Wimbledon the next day. He repeated this in 1990 with 220's. The 250-gr. jacket is about 2/3 as thick as the 220, and the grain structure of the 250-gr. jacket might be suspect. The barrel, by the way, was a 5R with 8-1/2 twist and about 1,250 rounds through it in the last big win. It is being retired.

Sierra revamped the 168's in the 1980's, and it was probably 1985-86 before most shooters got them due to old stocks at dealers.

My son took over my 7mm Magnum several years ago, being slight of build. We cut the load back and my problem with wild shots disappeared for several hundred rounds. I think it had about 500 rounds through it when he took it over and he shot it through 900 rounds. At any rate, the lighter load simply meant the bullet was taking less of a pounding as it passed through the throat. He never had a round come apart.

We have also shot 250's in the .308 quite a bit. I made my first 7.8-twist barrel for George and David Tubbs in, I think, 1986. David won the Palma first try using the 250's. You can really push the 250's hard with the small case, but it doesn't seem to eat up the barrel.

Olin is supposed to have some temperature studies on the large cases. I don't have the results first hand, but from what I hear, the big magnums put a substantial amount of heat energy into the bore.

My current gun is a .30-338 with a 10-in. twist in a 5R fluted barrel on a Savage 110 single shot action.

From your article, I suspect that your barrel may already be over the hump. Since it's long, try cutting off a large piece at the back and rechamber it. I set back both my .308's this summer and they went on winning. I admit I did this because both were fluted and I didn't have a mill running at the time to make more. Barrelmakers are like shoe makers — you often don't have time to do your own work.

The .308 is, of course, easy on barrels. I set my 7.8 twist back at 3,500 shots and won a 4-gun 600 at Lacrosse. Shot it with iron sights all four matches. Set my 8-1/2 twist back at 4,000 rounds and used it through Perry. I didn't set the world on fire, but made the Palma team with it.

Barrels wear with a taper to the lands. Lands wear much faster than grooves, so I think taper is a plus. Best results usually occur at 3,000 plus rounds.

Both Randy and I ended the 1990 season with high use on our .308's. I had 5,900 plus rounds, including the set back, and Randy had 6,300 rounds. He won his last three matches, including the regional. We think that cleaning and fluting have added to the life. Randy shoots a maximum 200-gr. bullet weight, so wear would be less than mine. Most readers of PS will gasp in horror, but we have cleaned with Gold Medallion and often Sweets. The barrels are fluted, so the heat is kept down. We think the mild polishing action of Gold Medallion (now, Remington Clean) helps check throat roughness. J.B. is the same compound, only a different carrier.

Some barrel roughness can be traced to cleaners. Cleaners with ammonia can cause pitting. Stainless is not immune.

Perhaps the single most important (and least covered in PS) factor is the shooter. He must shoot well, and to do so on a prone gun, it must fit. Forget big old bull guns. Most of my crew build guns to duplicate their match rifles. It's what they are used to. My 200-12X is a good example.

Short range tests mean little on a magnum. Try to shoot at least 600, if you can. I seldom shoot my long-range guns off the bench, because you can be mislead. Shoot prone with a sling; benchrests just don't work at these recoil levels. Plus, you get the practice. Ah, throw out a lot of ammo preparation and practice and your scores will get better. Too much time is lost trying to peel a 1/4 MOA off with ammo preparation when most shooters can't hold the 9-ring.

The idea of a .300 H&H is good, but a .30-338 is better. Shorter case for the same volume of powder, so you get better ignition. We have found Warner sights to be excellent. Most of us now shoot an Anschutz front with a Gehman adjustable aperture. For the rear sight, I use a Gehman 550 with polarized filters.

Barrel life on magnums may be as little as 400 rounds, but seldom goes over 1,000. My barrels are rifled quite a bit

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deeper than other brands, so life with other brands may be a little less than what I have mentioned with mine.

My favorite 1,000 yard gun was a .30 Gibbs during the 1970's on a Savage 110 single shot action. Had a 30-inch barrel. Velocity with 190's was 3,115 fps, with a 10fps extreme spread over ten shots. Used Norma 205 powder, but it is no longer available.

Back to your 7mm STW. If you figure 25 to 35 fps per inch of barrel length, you will see that a proposed 3,400 fps is about in the range of a 7mm Remington Magnum — 3,235 to 3,300 in a 34-1/2 inch barrel.

For practical shooting for an expert class shooter or even higher, one should aim to shoot solidly in the 180's at 1,000 yards. Then, build experience with shooting performance and wind doping. If you will notice, David shoots extremely fast and cuts his chances of missing wind changes. I've seen him shoot 20 record shots in 5 minutes. If the wind switches four times during a match, David will probably only get caught with one. I can't shoot that fast myself. If I can shoot my record shots in 10-11 minutes, I feel I am on my pace.

Hold is something I don't think newer shooters understand. Experienced shooters hold and call their shots much tighter than others. I have found that what I call an X is another shooter's 10-ring call. With a scope, you can partly see this, but must learn to squeeze off a shoot quickly without jerking. Part of good control is good conditioning — self-discipline. I believe that you must live with this every day if you plan to do much on the range. I have seen Eric develop the same way. It means not letting up and firing a bad shot just because you are tired. It means keeping pulse and muscle trim in control. For me and some of my associates, it means running, which also builds up good circulation needed for the eyes and low pulse, but also the ability to fire a long series of matches with less fatigue. Earl Liebtrau is not a good example of this, but he is for determination to excel. One of the best shooters I know is Sam Burkhalter. He can still stay with any of us on a given day. The only thing age has done to him is make it more difficult to repeat it day after day across the Nationals, but he is still capable of 790's.

I emphasize that spending time shooting buys more points than guns or barrels, and I make my living selling the latter. You need sound shooting guns, ones that hold zero and function all the time. Plus a good load or two that you can load quickly.

Most of us here live on the range in warm weather. I shoot a practice every Wednesday, and in long daylight hours it is a full 80-shot course. We shoot two-day matches about every weekend, almost all being full-course with a mixture of 600-yard 4-gun or team matches on one day. By shooting a mixture you learn it all. I even take the gas gun out once in a while. Eric still shoots one a lot for state team matches and has won the state service rifle championship. He switches guns easily and also set a new national Junior record of 792-33X last summer with a bolt gun. Beat me by two X's.

The match course 600 really works you hard for long range — shoot good there, use a like gun, and you should do about the same at 1,000.

Much of what I say here may not sit well with the bench rest crowd. I am really getting discouraged with the magazine. It seems like a popularity contest, with a lot of mutual back slapping. I have been reading it for about 20 years.

You could improve the magazine a great deal with more articles on how shooting is done and the overall importance of good averages amd development of skill, along with articles on equipment.

High power shooting is developing at the rate of about 8% per year. Active shooters greatly outnumber bench resters who actually compete. The numbers might be different if you count the benchresters who "shoot out behind the barn."

Boots

NOTE: This is about a third of Boots' letter. Much valuable information there. I will include more of it later.

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BR-50 NATIONALS — TEXAS STYLE

John J. Gammuto

The results of the first annual BR-50 national tournament will be recorded in the history books as moderately successful, but that will be the only thing "moderate" about it. The Gulf Coast Gun Club of Corpus Christi, Texas, represented by Macky Locklin, promised ideal seasonal conditions in their pre-match publicity. Shooting a rimfire rifle in gale winds would not have been my condition of choice, if given other options. Macky declaring over and over, "this is really unusual for this time of year" was of little consolation to me. If you've already read Macky's "official" match report and seen the photo of me, I want you to know that is not the way I normally wear my hair. The wind may have even permanently removed a few strands from my scalp. In spite of what others with less than perfect memories may tell you, the photo tells the true story.

Conditions were tricky, but it made for an interesting and fair event. The guy with the most accurate rifle, whoever he was, didn't have much of an edge on the rest of the competition. In order to hit the target, even at the designated 50 yards for rimfire and 25 for pellets, you had to be able to dope the wind and not be afraid to hold-off a **goodly** amount.

In spite of Macky's broken promises, the match went on as scheduled. What a match it was. Cliff Mueller, a fellow shooter from Illinois, took all the top plaques back to the "Land of Lincoln" in his luggage. It made me happy to see Cliff do so well. Not only because he is from my home state, but because he dedicated himself to the BR-50 game in the 1991 season. Cliff did everything within his means to be in top form for this event. Building the winning gun, developing a game strategy, hours of practice, and testing himself on the Midwest circuit all contributed to his success. It's nice to see hard work and dedication rewarded.

The rest of the competitors came prepared, with the exception of yours truly. There were some awfully determined faces on the line as I approached it for the first time. No one got up to say "howdy." After all, practice is practice and socializing is socializing. A simple nod was all anyone got until the call for a cease fire was acknowledged and accepted, then the atmosphere changed. Everyone was quite pleasant.

This event was no different than other national tournaments I've competed in, i.e., the usual equipment observations were made and noted. Those that are preoccupied with gadgets and "new-looking" things were disappointed with my rig because it was a plain vanilla Remington 40X, but there were plenty of other offerings to examine. In spite of the fact that there are some rules governing BR-50, no one seemed to be preoccupied with them. There never was any question whether an individual rifle or piece of equipment was legal or not. This is a game, by design, where almost anything goes. You are free, even **encouraged**, to bring all that you can to bear on subject. Traditional benchrest programs have, at least in my opinion, lost sight of this aspect of the game. It was refreshing to see an overt attempt being made to encourage individuals to experiment and question standard practice.

Some interesting approaches to stocks were observed. The stock work ranged from factory offerings to true works of art in wood and plastic. One of the most interesting fellas there was a man by the name of Neal Ward, a stockmaker extrordinaire. This guy does things in high tech plastics that can only be described as clean, sound, and logical. His approach to stock design and execution are nothing short of brilliant. It would be easy to compare his work to the muscles and skin of the human body. They house and protect vital organs and systems. It is his approach to the housing and protection of the action and barrel that fascinated me. Meeting Neal was worth the price of the trip alone. Mr. Ward promised to send me some photos and a brief biograph to build a story around. As soon as I receive it, you'll see it in print. If you are the anxious type he can be reached at the following: Champion Graphite Stocks, P.O. Box 10669, Corpus Christi, TX 78410, (512)241-1553.

The administration and supervision of the tournament was well conceived and executed. Larry Brown, founder and promoter of the game, was on hand and proved to be a capable individual. His only objective being that his people have fun and meet the challenges of the day. Anyone that thinks this fellow is in it for himself is dead wrong. Larry strikes me as a man that enjoys sharing his time and expertise with others. I spent hours with him and observed his interaction with others. He is as genuine as he appears. His ego is in check.

For some reason, people today resist supporting non hardware producing endeavors. In other words, they believe ideas are cheap. This is probably the furthest thing from the truth my friends. If it were, we'd still be buying tea from the King's merchants in Boston. Selfless men like Larry Brown deserve our support and encouragement. Good ideas

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are few and far between. BR-50 is a good idea and will someday, with minor adjustments, be one of the premier shooting disciplines.

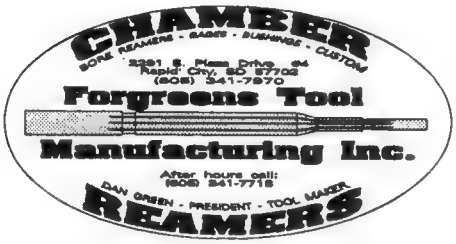
Macky Locklin , representing the host club, was all things to all competitors. He seemed to be everywhere and have an answer to all questions. With talents like this, one wonders why he is not a candidate for political office. He was smooth. In addition to setting the targets, assigning benches, and scoring the targets, Macky found time to be cordial and share a meal with us.

It was a shame that the event did not draw several hundred people. The fun would have been compounded proportionately. As it was, everyone got to know each other that much sooner. The funmaking and casualness of the event started a day and a half earlier than most other tournaments. It only took me an hour or so to size everyone up and know who to harass first.

Larry Brown and I casually discussed the future direction of the sport and came to some very interesting conclusions. One bit of advise I did offer had to do with his approach to promotion. Larry has been promoting the game as "the meanest game in town." Although BR-50 is difficult, it is not beyond the capabilities of the average shooter. A new guy with a moderately accurate rifle can be competitive (especially under conditions like we had the weekend of the tournament). You don't need a lot of fancy gizmos and gadgets in your accessories box. This cuts the cost of competition way down.

As mentioned previously, I shot a factory Remington 40X. There was nothing special about it except the fact that I had replaced the factory trigger with one of Arnold Jewell's **jewels**. I had shot only one target prior to going to Corpus Christi, and that was in practice 6 months prior to the event. If you look at Macky's match report you'll see that I finished in the middle of the pack. This should be proof enough that this is a sport where a factory gun can be competitive.

All in all, I had a great time at the event and met a lot of good people. I encourage you to check the BR-50 game out. It is a lot of fun. Maybe we'll even see you at the nationals next year.



LETTER TO THE EDITOR

Dear Dave,

First I would like to thank you and the Col. for your advise concerning case run-out problems I was having with my .308 Win. (November issue, page 10). As with all things, as more and more information becomes available, a few hundred more rounds fired in this case, the clearer the situation becomes. I believed I had solved my run-out problem, but a call from a Toronto gentleman started me questioning again.

I thought, and still think, most of my problem was a combination of ejector spring and headspacing woes. When I originally wrote to you explaining that the necks were running out of line with the body of the case I was shooting factory ammo, then neck sizing, then neck turning. Hindsight being 20/20, the factory load did not headspace properly, the case was held in and pivoted around the extractor, the ejector pushed the case until either the bullet touched the inside of the bore or the body of the case touched the chamber on the opposite side. When detonation occurred the neck obturated and fireformed in-line with the bore while the body of the case was still askew.

Full length sizing those cases and seating 168 Sierra Matchkings just engraving the rifling produced much better results. In fact this rig shoots between 4's and 7's all of the time. I really thought that .300 spread was me not doing my part. And no doubt some of it is — maybe. I've used four different lots of brass looking for the right combo; R-P, FC, LC 82 and LC 88. R-P almost without fail will shoot .75 in., FC .63 - .75 in., both LC's - .45 - .55 in. groups with LC 82 closer to the .45 average. Therefore, I had these four cases rated from best to worst LC 82, LC 88, FC and R-P. Then I get a phone call from a gentleman in Toronto who says he has the same problem as mine.

Seems he read my letter in PS and wanted to share some of what he had learned. It seems his problem is even worse than mine and he has done all that Col. Hornbeck recommends already. Well, I proceeded to tell him all of the wonderful things I had learned in the past few weeks. He was unimpressed: He'd done all that too. Now he starts asking me about my case measurements.

First he asked if I had a noticeable swell at the pressure ring. I do not — he does. Then he asked about base diameters. It was his experience that base diameters for the different manufacturers was varying from a low of .466 (FC) to a high of .470 (RWS). His pressure ring was measuring .474. He says the RWS brass shoots more consistent, and he thinks it is because of the larger base diameter. Hummm...

How long do you think it took me to get to the loading bench after that call? Pressure ring diameter LC 88 - .4704, LC 82 - .4706, R-P - .4694 and FC - .4693. I seem to have a tighter chamber. Base diameter LC 88 - .4698, LC 82 - .4703, R-P - .4674 and FC - .4692. Arranged by base diameter largest to smallest LC 82, LC 88, FC and R-P in the rear. Did you happen to notice this is the same order as when accuracy was the measure. Is this coincidence?

I don't think it's coincidence. It could be something that benchresters have known for so long they forgot. Is there more here than meets the novice's eye? I don't recall seeing anything written about selecting brass based on base diameter, but custom bolts abound. Are these two solutions to the same problem?

Regards,
Bruce Wetherbee
29 Ivernia Road
Worcester, Mass. 01606

P.S. I have shortened the ejector spring and polished the plunger. The ejector now just hands me the case and it looks prettier.

(Editor: I am concerned about your dealings with "a gentleman in Toronto." Is it possible that you are ignoring my warnings in that same November issue about The Canadian Peril ... and the as yet unconfirmed reports that the Canadians are massing on our Northern border?)

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by Karl Bosselmann

A what?

Yep, you read correctly.

In late spring, 1991, I met Irwin Rowe and Lloyd Luhman, both of Las Vegas, Nevada, while I was there at the Desert Sportsmans' Rifle and Pistol Club doing some extensive experimenting with a Ruger No. 1 Single Shot Rifle in .338 Winchester magnum caliber. Two very interesting men, they are dedicated target and varmint shooters. Our conversation eventually worked around to the discussion of sabot-type projectiles; they had initial plans established to soon begin investigating such bullet styles for application in some smaller bore calibers. I then described, in part, some of my own past experimenting with these in the .458 Win. mag. chambering. They had showed decided interest, so I thought some readers of PS Magazine might like to read of the results.

Sabot (pronounced sab'o; Fr. sa bo'), as defined in the Dictionary Of Weapons And Military Terms, by John Quick, Ph.D, is, "...a lightweight carrier in which a subcaliber projectile is centered to permit firing the projectile in a larger-caliber weapon. The sabot diameter fills the bore of the weapon from which the projectile is fired;" the Random House Dictionary Of The English Language refers to it as "...a soft metal ring at the base of a projectile that makes the projectile conform to the rifling or grooves of a gun;" the SHOOTER'S BIBLE Small Arms Lexicon And Concise Encyclopedia calls it "...the name given to a separate base or cup used on certain projectiles.. Formerly also so used on projectiles shot from muzzle loaders." Sabot projectiles have been used by artillery units of various nations since the turn of this century; in recent years, the United States military increased development and experimentation in bore sizes of 7.62mm, .50-caliber, and 20mm.

One necessity to top accuracy levels of the sabot assembly is the mating of the subcaliber bullet to its own appropriate barrel rifling pitch (twist), **not** in mating the groove-diameter carrier envelope to the rifling pitch which would, at first consideration, be the logical route to pursue.

Remington Arms Company is the only firm currently producing commercial sabot-type ammunition, but it's offered in only three popular 30-caliber chamberings. Known as their 'Accelerator' series, it includes the .30-30 Winchester, the .308 Winchester (7.62mm NATO), and the .30-06 Springfield cartridges. The sabots used for these calibers are identical – a hollow-based, six-fingered, 7-grain-weight carrier made of Delron (a tough plastic that resists heat). Likewise, the subcaliber, 55-grain, .224"-diameter bullets used are identical. The basic reasons for such a projectile design is its radically increased velocity, reduced chamber pressure (less projectile weight and its decreased resistance to the barrel bore), and markedly diminsihed recoil over standard types of bullets. Concerning velocities, the 'Accelerators' in .30-30 caliber exceed 3000-fps; in the .30-06, the 4000-fps figure is surpassed. All of the above 'Accelerators' are intended for general shooting (plinking), or varmint hunting; the tiny 55-grain bullets, even at such high speeds, are a poor choice for even small deer-sized game animals.

To date, no big bore ammunition has become commercially available in sabot loadings. In a recent conversation with Steve Hornady (Hornady Manufacturing, Grand Island, NE), he severely questioned the marketing feasibility of such a move were it to be considered. True, sabot ammunition is relatively expensive to manufacture, but one would think, and I know I would, that at least one large caliber loading might have been released..... 45-70's, for example, do sell in quantity.....to test the concept's marketability.

Before actually beginning to experiment with a sabot-type projectile assembly in a large bore caliber, I debated with myself over several standpoints as to both the feasibility and the practicality of the venture; also of definite concern was the choice of an ideal chambering. Eventually, I decided upon the .458 Winchester magnum due to my absolute preference for big calibers, but also for its small-capacity (actually under-bore-capacity) case...a relatively low volume with which to work...which was straight-walled, thus allowing unimpeded exiting of gases. This latter factor I felt to be of immense importance since I would be working in a trial-and-error approach and without the benefits of a computer.

As to the rifle, I chose a Ruger No. 1 Single Shot Tropical (Catalog 1-H) Serial #131-45XXX, due to my preference for this particular falling block design, its strength and simplicity, and for its lack of overall cartridge length restriction. Additionally, the rifle is immensely strong, certainly equal in strength to most production-grade turnbolt rifles.

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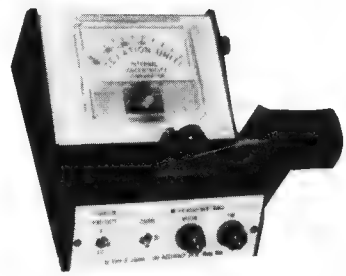

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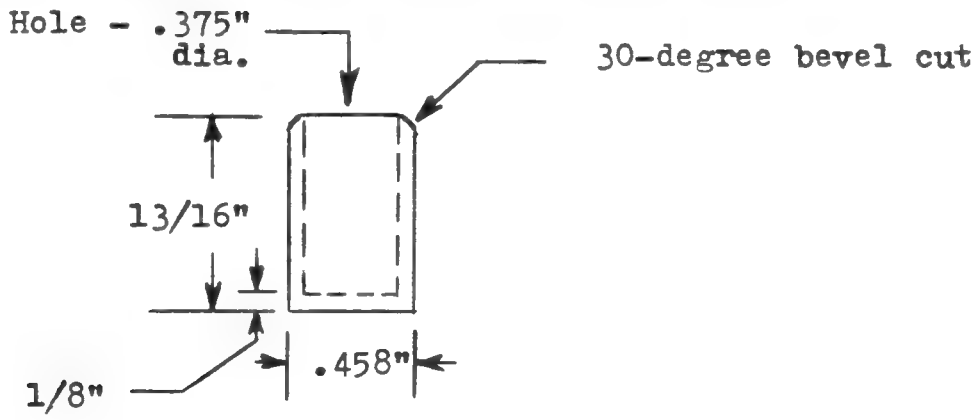
Delron, I obtained a five-foot-long rod of porcelain-white teflon. I then slugged the Ruger's bore and turned the OD to match it. The length of my initial sabot cup, which was a cylinder without 'fingers,' was a close length/caliber ratio to that of Remington's 30-caliber carrier. For the subcaliber bullet, I chose Hornady's .375", 300-gr. round nose soft point as produced for the .375 H&H magnum cartridge. Specs follows in the illustration below.



Loading for this test was:

71-grains #3031 DuPont, CCI #200 Large Rifle primer.
300-grain Hornady .375" RNSP.
Chronographed velocity (estimated) - 2228 fps.
Weight of sabot and Hornady bullet - 333.7 grains.
Seating depth ---------- 5/16-inch.

- PURPOSE OF THE ABOVE LOADING:

#1 - to see if teflon was a viable alternative material;

#2 - to see if the above design would provide separation from the sub-caliber bullet (which it didn't); and,

#3 - an attempt to see if the powder and charge would increase velocity over the same powder and charge with a .458", 400-grain round nose soft point fired out of the same rifle (the difference was negligible).

Continued on next page

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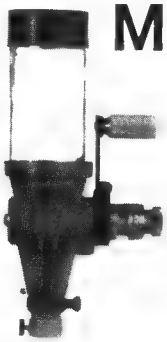

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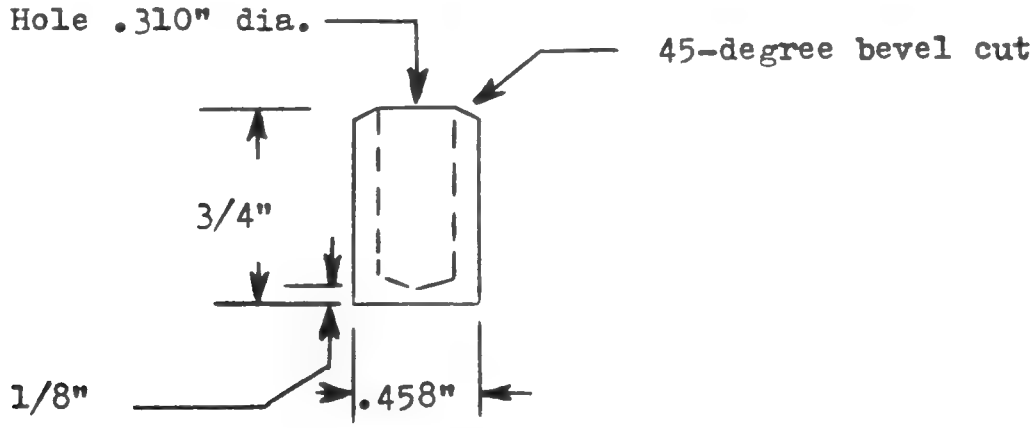
A 4000 FEET PER SECOND .458 WINCHESTER MAGNUM

Continued

The five-shot group fired with the above loading measured 6 7/8" center-to-center at 40 yards. Velocity was much lower than I'd anticipated; IMR #3031 is far too slow-burning for this light projectile; recoil was virtually non-existant out of this nine pound rifle. There was no teflon jacket separation in flight, and examination of this carrier proved the rifling marks to be clearly defined with no tendency to skid being evident.

After this initial test, I changed to a faster powder – IMR #4198, with the above projectile. With results again disappointing, I went to IMR #4227 as the propellant and with the accompanying change to a .308" subcaliber bullet so as to try to attain the ultimate in velocity. I slightly redesigned the carrier to the dimensions below, and utilized the more rigid Polypenco® Nylon 101 (Type 66 annealed) material as I felt it would improve rifling purchase as velocities escalated, provided the base would not melt from the gases.



Loading for this test was:
53-grains #4227 IMR DuPont, CCI #200 Large Rifle primer.
(Charge was guesstimated, not computed).
Two bullet styles:
.308" 165-grain RN: bullet wt. with sabot ---187.2 grs.
.308" 174-grain BT: bullet wt. with sabot ---196.2 grs.
Seating depth ----------3/8-inch.

Five rounds of each bullet weight/style were fired with the above IMR #4227 loading; velocity wasn't chronographed but it seemed low. Vertical stringing of the group produced by the 174-grain bullet occurred at the 10 o'clock position: the 165-grain RNSP was more stable and in a target-centered cluster of 2 1/2-inches center-to-center. There were absolutely no signs of pressure; no in-flight separations of the carrier took place; rifling cuts on the recovered carriers were distinct and deep, and the nylon material didn't melt at the base as was feared.

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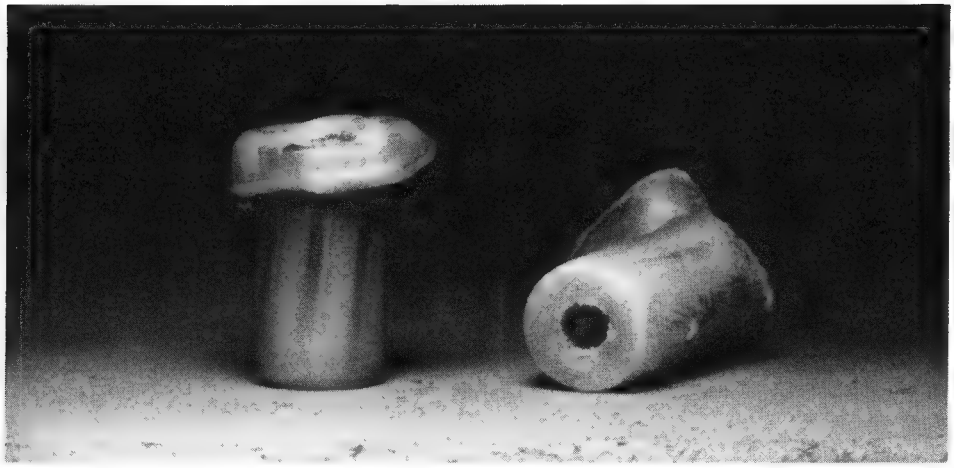
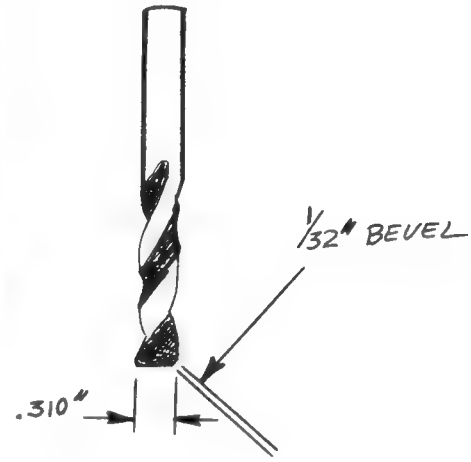


Typical carrier expansion achieved with the nylon material and 60, 63, and 65-grain charges of IMR #4227 at 40-yards. These two pictured remained with the subcaliber bullet in flight and penetrated 7-inches of seasoned pine wood before separating.

Note the hole in the bottom of the carrier on the right – this is typical of the failure as constructed when using a bevel-tip drill and the top-end, 65-grain charge of powder.

At this stage, I concluded to retain IMR #4227 powder as the propellant (unless future developments negated this), to try to increase the powder charge further, and to re-design the carrier in an attempt to achieve in-flight separation as well as an improvement in accuracy. Consequently, I tried several different carrier designs over the next several days, some included cutting four slots down the sides, beveling the inside top of the (subcaliber) bullet hole, and utilizing a 9-degree shoulder, all which proved ineffective for in-flight separation and most of them detrimental to accuracy.



The new drill used from this point on was a standard 5/16" bit I altered to a flat point (to thicken and thus strengthen the base of the carrier), and reduced its shank diameter from .3122" to .310", .002" over subcaliber bullet diameter.

Continued on next page

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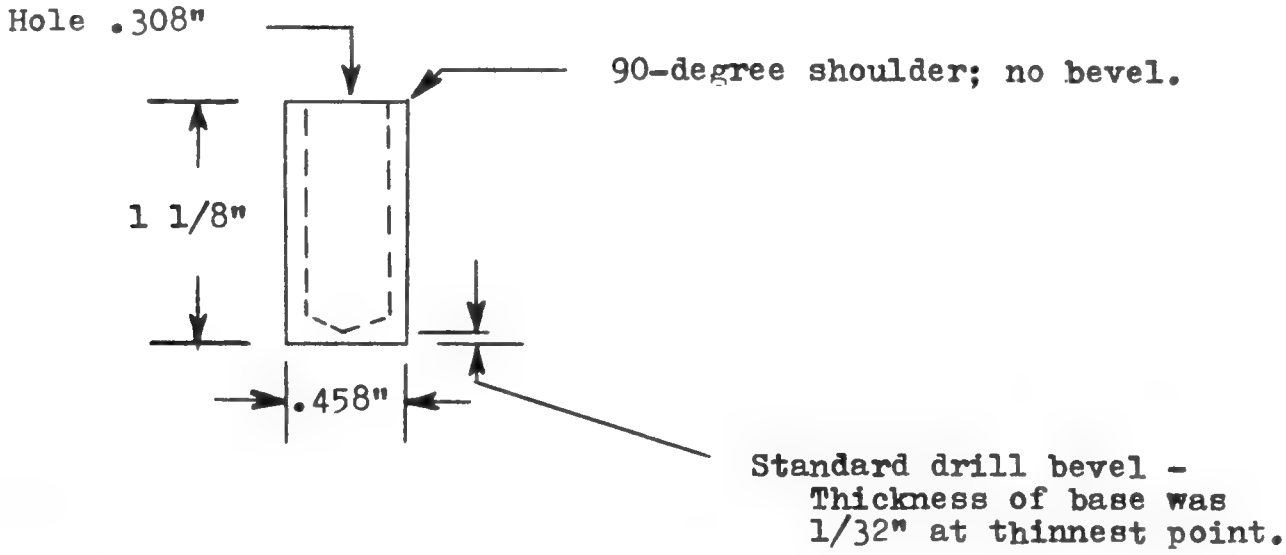
A 4000 FEET PER SECOND .458 WINCHESTER MAGNUM

Continued

Without laboratory facilities available, I then decided to forget about projectile separation and , instead, try for retention, very high velocity, and accuracy via advocation of a long, heavy subcaliber bullet. After all, separation might not be necessary even if the distance approximates 150-yards. I chose Hornady's excellent 220-grain RNSP and kept with it through most of the remainder of my experimenting.

The next major carrier design is as follows: I reverted back to the original .308"-diameter drill with the bevel-tip, and produced the envelopes .0015" under the rifle's barrel groove diameter.



Loading for several succeeding tests were:
55 through 65-grains #4227 DuPont powder, CCI #200 Large rifle primer.
Weight of sabot and Hornady bullet ----------252.4 grains.
Seating depth ----------1/2-inch.

I increased the target distance to 50 yards in order to give more opportunity for in-flight stabilization which remained radically compromised due to the too-slow rifling twist of the .458 barrel. Again firing 5-round groups, the 60-grain charge of IMR #4227 produced a 2 1/2-inch center-to-center pattern that was concentric; impact point at this short distance was 15 1/2-inches high in this rifle that was sighted-in for 100-yards with a 71-grain charge of IMR #3031 and a 400-grain RNSP (.049" jacket) Barnes bullet. The 63-grain load produced a more radically formed group that was 4 3/8-inches out of target center that strung from 11 to 1 o'clock. The 65-grain (IMR #4227) powder charge keyholed two of the five, all five placed an irratic group, and each of the carrier bases had a hole punched through it (see illustration). There were never any signs of high pressures, but I decided to not increase the powder charge past the 65-grain level without laboratory equipment — IMR #4227 burns very fast and this is too large a quantity to not allow it some healthy respect; I didn't want to experience a detonation.

Still remaining with the Polypenco® material, and deciding to increase carrier diameter by .003" over the previous design, or .0015" over barrel groove diameter, here is my semi-finalized carrier design for this point in time:

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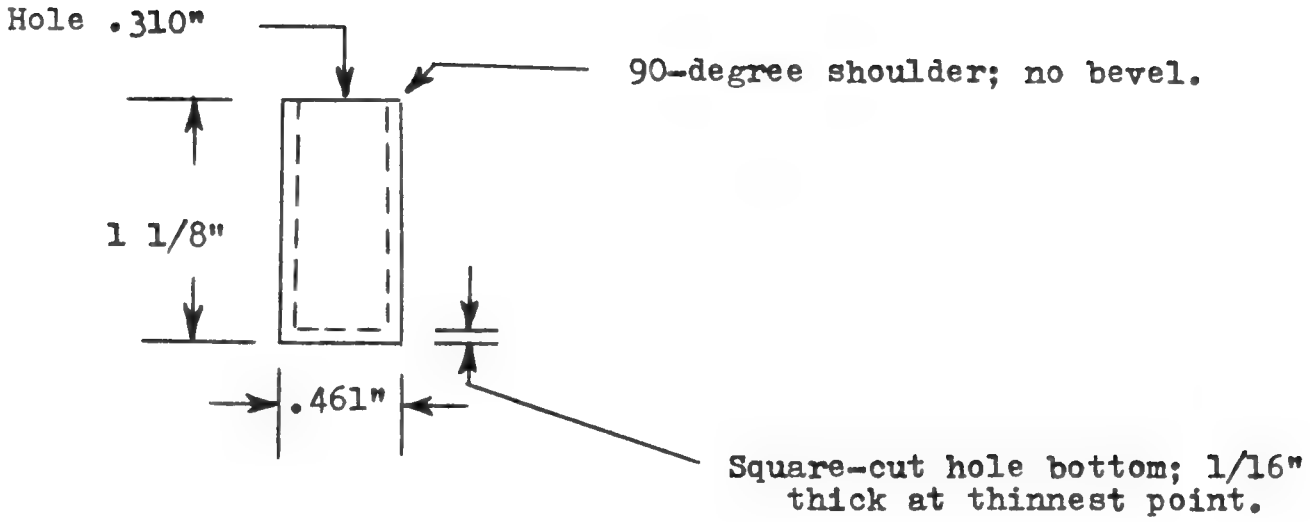


I moved the target out to sixty yards, and again with the 63-grain charge of IMR #4227 powder, once-fired Winchester cases, handweighed charges and selected (as to weight – within 1/2-grain) projectile assemblies, and CCI #200 standard primers, the .002"-larger carrier hole seemed to produce the improvement in accuracy. Six 5-round groups were fired; the average group size was 2 7/8-inches.

Out of a new batch of carriers (all hand-turned individually on a lathe), fifteen were selected by weight, powder charges individually handweighed, and the projectile assemblies were then seated to give a case-head-to-end-of-sabot measurement of 3 1/8-inches.

As to chronographing, this was done at Winchester Canyon Gun Club, West Camino Cielo, Santa Barbara, CA in May. Altitude there is about 3800 feet; temperature was above 70-degrees (F). Chronographing was done by Far West Gun & Supply, 2009 State Street, Santa Barbara, CA using an Oehler Model 33.

Continued on next page

POWDER	CHARGE IN GRAINS — Winchester cases; CCI #200 Primers	MEAN VELOCITY
IMR #4227	60-grains. (No powder compression; powder level about 3/32" under sabot).	3831-fps
IMR #4227	63-grains. (No powder compression; powder level about 1/16" under sabot).	4018-fps *
IMR #4198	72-grains. (Powder was compressed about 1/4-inch). This powder is far too slow-burning and resulted in a large fireball in front of the muzzle.	3110-fps

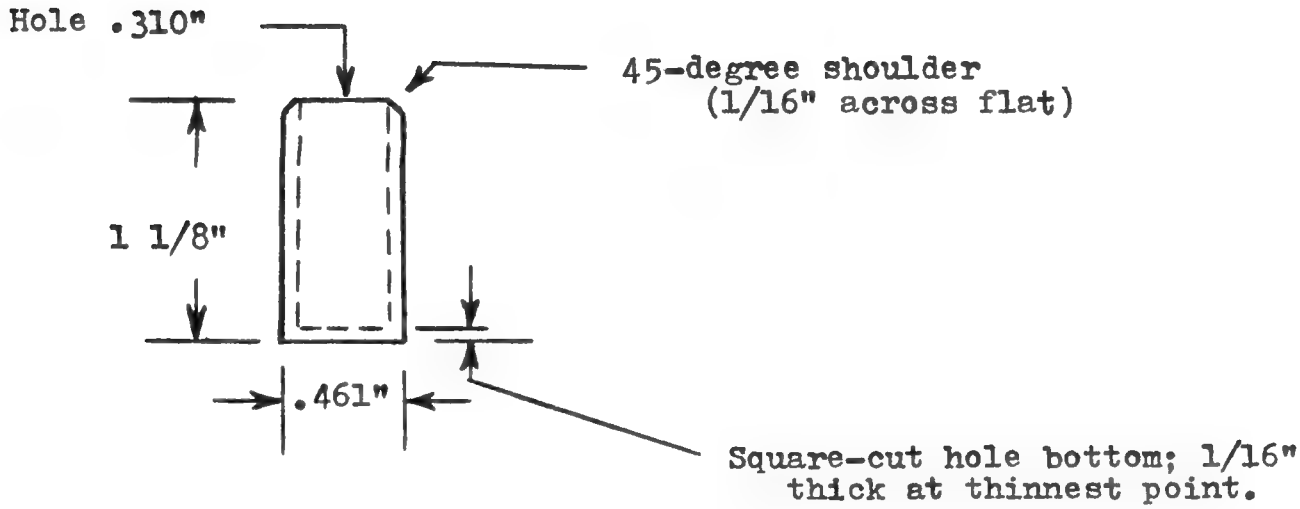
* - This same loading, when fired in Ruger No. 1 Rifle .458 Win. mag. caliber, Serial #132-752XX, produced velocities averaging 4266-fps. A little variation goes a long way with these loads; this second rifle had a groove diameter .0005" larger than the primary gun, and it also had a longer chamber throat.

A 4000 FEET PER SECOND .458 WINCHESTER MAGNUM

Continued

The only thing I have really accomplished at this stage is some very preliminary work. Should any of you readers decide to seriously pursue this endeavor further, from advocation of the discarding sabot (Remington's 'Accelerator' principle) to the very basic carrier-covered subcaliber bullets, the results should prove to be absolutely phenominal from the standpoints of ultra-velocities, terminal ballistics, and surely from the realm of the investigation itself. Personally, I would recommend Delron as the material: I'd also recommend extreme caution when experimenting – **use a lot of common sense!**

- - - SPECS OF MY FINALIZED DESIGN AS PRODUCED FOR RUGER NO. 1 RIFLE #132-45765 - - -



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The rifling twist of this Ruger No. 1 Tropical Rifle (Catalog No. 1-H) measured 1/14-inches. For the sub-caliber bullets (which MUST be mated to the barrel rifling pitch for stabilization and top accuracy), I was considering all of the following:

	Recommended rifling
.308"-caliber (.308 Winchester, .30-06 Spfd., .300 Win. mag., .300 Wea. mag., .300 H&H mag., and .308 Norma mag.)	1/10".
.338"-caliber (.338 Win. mag., and .340 Wea. mag.)	1/10".
.375"-caliber (.375 H&H mag.)	1/12".

For the initial stages of experimentation, I didn't consider the 2 to 4-inch variance in rifling pitch (from .458" to .308" and/or .375") to be a critical factor; in the final analysis, however, and for optimum performance, it is critical since it resulted in projectile understabilization.

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From left to right: Remington's 55-grain, .224-caliber 'Accelerator'/sabot projectile assembly; Hornady's 220-grain, .308"-caliber RNSP bullet; the Hornady bullet seated in a Delron sleeve; my sabot-type projectile assembly seated in a .458 Win. mag. case (loaded cartridge). Despite the lengthy 3 1/8-inch measurement from case head to 'sabot' shoulder, projectile contact with the chamber throat was not made; seating depth is 1/2-inch.

From left to right: Remington .30-30 Winchester 'Accelerator'; Remington .308 'Accelerator; Remington .30-06 'Accelerator'; .458 Win. mag. case with my teflon sleeve and a Hornady .375", 300-grain bullet; .458 Win. mag. case with my Polypenco® sleeve and a .308", 174-grain bullet; .458 mag case with my Polypenco sleeve and a Hornady .308", 220-grain RNSP bullet (my semi-finalized design).

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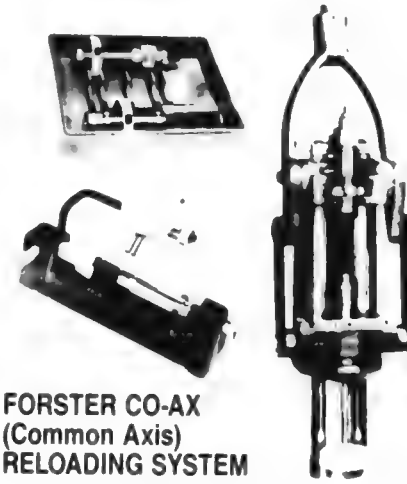

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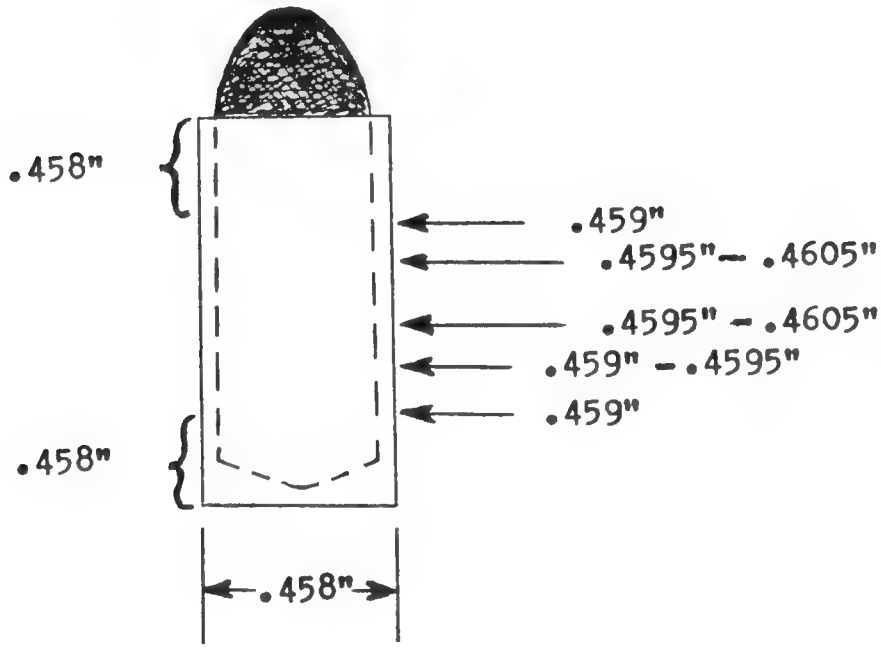
From left to right: Remington's .30-06 Spfd.-caliber 'Accelerator'; .458 Winchester magnum case loaded with my finalized sabot-type projectile assembly utilizing Hornady's .308", 220-grain RNSP subcaliber bullet ... velocities reached thus far have exceeded 4200-fps; a factory-loaded .458 Win. mag. cartridge with a 500-gr. RNSP shown for size comparison; a wildcat .458 MCW Express cartridge (similar to the .450 Ackley mag. but with less body taper and longer body) loaded with my finalized sabot-type projectile assembly ... velocities reached so far have exceeded 4700-fps (loading data withheld by the author); and, for size comparison, a .458 MCW Express cartridge loaded with a Hornady .458", 500-grain solid.

In press-seating the Hornady bullets into the .308"-ID sabots, slight bulging occurred by the tight fit. Average variances in a batch of 25 sabots were as follows:

- - - SABOT WITH THE SUBCALIBER HORNADY BULLET - - -



(Sabots without seated bullets measured a fairly consistent OD of from .4575" to .4585").

NEW ENGLAND BR-50

Three informal BR-50 matches were held recently at the Pownal Valley Rifle and Pistol Club to aquaint members with this type of competition. Attendance was low, but those present were all benchrest shooters who compete in the winter league matches at Dunham's Bay. Earl McFarland of Williamstown, Mass. won the first match on October 26th with a 3275 in excellent conditions. Frank "Jake" Harris of North Adams, Mass. won the second match on November 2nd with a 3350 in almost perfect conditions, and repeated on November 9th with a 3215 under tricky wind conditions. McFarland and Harris shared the same rifle, an unmodified Winchester 52 with a 20X Leupold scope, and both used RWS R50 ammunition. Others competing used unmodified Winchester 52's and various Anschutz target rifles.

The scores reported above are raw scores, as the club does not at present have access to anything other than a bathroom scale — but the rifle used by the winners weighs roughly 12 pounds.

All agreed that the BR-50 target is extremely challenging and requires the very best equipment. Many rimfire target rifles that do acceptably well at 50 feet and even 50 yards on the standard NRA smallbore targets quickly demonstrate their deficiencies on the BR-50 targets. This is not a competition that will long interest shooters who just want to dig into their closets and see how that old .22 rimfire of theirs will do. It will not do well!

Competitors agreed that just as in regular benchrest shooting, ability to dope the conditions and good bag technique are essential to success, making BR-50 competition excellent practice for benchrest competition. Matches are quick and cheap, compared to regular benchrest matches, and no moving backers are required. Scoring the BR-50 targets takes a while to learn, but is not excessively difficult. These matches have greatly stimulated interest, and the club intends to hold more in the future. Anyone in the North Adams-Williamstown-Pownal area interested in participating in these informal matches should contact Earl Mc Farland at (413) 458-8415.

Thanks,
Sincerely,
Earl L. Mc Farland Jr.
23 Greylock Village
Williamstown, MA 01267
Tel.: (413) 458-8415

Program

TENTH ANNUAL CACTUS CLASSIC MONEY SHOOT

MARCH 7, 1992: Light Varmint 5-5 shot matches at 100 yards
Heavy Varmint 5-5 shot matches at 100 yards

MARCH 8, 1992: Heavy Varmint 5-5 shot matches at 200 yards
Light Varmint 5-5 shot matches at 200 yards

The first match in each class or yardage will be a ten (10) minute match. Yardage bench rotation.

FEES: Registration fee of $20.00 per day. This is an NBRSA registered shoot. The cash option fee is $30.00 per day. All cash option fees will be returned to the competitors. You do not have to participate in the cash option. The merchandise will be awarded by your finish in the 100 yard Heavy Varmint aggregates and distributed Sunday morning.

AWARDS:

CASH TO BE AWARDED AS FOLLOWS:

Match Winners	2 Places
Aggregates	3 Places
Grand Aggregates	6 Places
Two (2) Gun	20 Places

TROPHIES TO BE AWARDED AS FOLLOWS:

100 Yard Aggregate	5 Places
200 Yard Aggregate	5 Places
Grand Aggregate	8 Places
Two Gun Aggregate	10 Places
Small Group each Range Each Gun	4
H & S Precision Shooting Trophy Two Gun Champion	1

RANGE LOCATION: Ben Avery Range is located 15 miles north of Phoenix on Interstate 17 and Carefree Hwy.

FACILITIES: Fifty five covered concrete benches. Covered loading areas are available. Camping with hook ups are available at the park site. The range is open for practice Tuesdays through Sundays. ($2.00 fee). Food and beverages available at the range March 7 and March 8.

MOTELS: E-8 MOTEL (602) 943-2371 RAMADA INN (602) 866-7000
Please make your own reservations. Other motels available.

ACTIVITY: There will be a get to know you gathering at the SHOOTING RANGE CLUB HOUSE Friday evening March 6. Complimentary food and beverages will be served.

ENTRY FORM: Send entries to and make checks payable to:

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c/o Walter and Eunice Berger
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Total fee for two days $100.00

You must be an NBRSA or IBS member to shoot.

Preregistration is required. Registrations limited to 165 competitors. Payment must accompany registration. No phone registrations. Total refund on cancellations to Feb. 15. No refunds after Feb. 15, 1992. This is a result of having to tell shooters that we were full and then having no shows the day of the match.

Signature _____ Date _____

Name _____

Street _____

City _____ State _____ Zip _____

LETTER TO THE EDITOR

Dear Dave,

A copy of "The Best of Precision Shooting, Volume II" came in the mail not too long ago, and it has provided lots of great reading. It is every bit as good as Volume I, and I am glad to have both. Congratulations! You deserve a lot of credit for the splendid job of editing that it exhibits.

I am writing to see if I can get someone with skills which I do not possess to do something which I think will benefit shooters of all disciplines. Please allow me to get to it in a round about fashion.

A couple of years ago, I obtained a new Remington 40-XB in caliber .30-06 with the 27-1/4 inch barrel, .875" at the muzzle. When asked by the person at the Remington custom shop which trigger I wanted them to install, I said to put in the two ounce model. When I got the rifle, I installed a Leupold 36X target scope with an eighth minute dot in Buehler mounts and proceeded to break in the barrel and to work up some handloads. My hunch is that the rifle was intended to be a 1000 yard Wimbledon match rifle, but, having no range ot 1000 yards available locally, I chose the two ounce trigger so I could explore just how accurate the .30-06 can really be.

I never had a rifle like this before, and I was having so much fun shooting what, for me, were very small groups that, by the time I really noticed, I had fired over 900 rounds through the gun. Yet, even though I had used an MTM log book and had recorded every shot fired through that tube, I really didn't know what was my best load or even where to go from there.

So, I sat down with a good Marsh-Wheeling cigar and a Diet Coke (please don't cringe) my diet won't allow beer or wine) and started to do some analyzing of my data to see what I could learn from it. I found that a load of

47.0 grs. 4320
F210M primers
Den-43 cases
150 gr. Nosler match bullets
3.365" overall length

gave me an absolutely stupendous group which, measured as best I could with my micrometer calipers, came out to .167"! This at 100 meters, not yards. This is the best group I ever fired in my life. I was pretty excited by that group, so I loaded twenty more and fired it again on another day. Four consecutive groups without cleaning between them, but allowing the barrel to return to ambient temperature between groups, went into .242", .642", .540", and .437" for an average of .46525"! I also noticed that the Speer 190 gr. bullet had done well, and so had Rx 19 powder. So, I decided to work on those two combinations. In time, I was able to get groups which would shoot between .650" and .750" every day no matter what the conditions.

Then I noticed that Sierra, Barnes, and others had come out with computer programs which would allow the shooter to plot his trajectory, energy, and velocity (plus a few other things too, I suppose). That set me to thinking (a dangerous thing sometimes), and I wondered if I could set my MTM log up on a spread sheet and have all the columns interconnected such that I could ask certain questions of the data I had accumulated and, thereby, learn more than I could by just having raw data at my disposal. For example, wouldn't it be nice to ask your computer to list for you all loads which had resulted in groups under one inch? Now that sounds pretty crude and large for shooters of the 6 PPC, but they could ask the computer to list all groups of less than .100" that had ever been fired. Or, ask for a list of all groups fired using F210M primers. Or a list of all groups fired below 32 deg. Fahrenheit. It seems to me that a computer programmer who also has a shooting background could come up with some software which would do all I have suggested here, and more. I suggested this to Dave Corbin during a visit to his plant at White City, Oregon over a year and a half ago, but I guess he is too busy running his swaging die business to be able to sit down and design such a computer program. At that time, he thought such a thing could be set up so that the operator could ask lots of "what if" types of questions and go into areas which might result in more efficiency and less expenditure of components in arriving at an accurate load.

I have no computer programming ability, but I like to shoot. But, some shooter out there has the ability needed to put such a piece of software on the market. Someone could be a lot richer, and we all would benefit from it.

Here's hoping a computer program to replace the MTM and the Sinclair log books springs into being soon. I promise I'll buy one.

Best wishes and may your Christmas be an "official screamer."

Sincerely,
Tom Kollin
8268 Garnet Street
Juneau, Alaska 99801

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Groups of figures, abbreviations and initials count as words. Hyphenated word counts as two words. Name and address of advertiser is counted. Use full words instead of initials and abbreviations and make your meaning entirely clear.

Classified type ads: no display. **Rates:** 20 cents per word per insertion, prepaid. Minimum charge is $1.50. Closing date for ads is the 1st of the month preceding publication. To illustrate: we must have your ad copy in hand by August 1st to make the September issue.

VERRRRY INTERESTINGGGGGGG THIS MONTH!!!!!! — J.G.

Wanted: 222 Remington, heavy bbl., for Remington 700. Gene Rapstine, RR1, Box 41a, Kendall, KS 67857.

"New" .220 Russian brass. Shilen 2 oz. trigger. Rem 700 trigger. Rem 40X bolt - .222. Rem 40XB-BR original stock, excellent condition, no epoxy bedding. Rem. 700 BDL stock. Redfield 6400 Target Scope, 24X CH reticle, original case. Call Fred evenings before 10:00 (708) 839-1781.

2 - New, SS, Lilja Barrel Blanks, $180 ea. 6mmX14 Hunter taper/ .30X12 #6 contour. Zeiss 10X40 binoculars as new $700. Call (409) 657-2554.

Wanted: Shooters interested in adding a quality book to their personal collections. Check out Boyd Mace's *Accurate Varmint Rifle.* **It's selling better than .220 Russian brass.**

Wanted Swindelhurst Action or Rifle. Call or write. Pat Cameron, (519) 848-3374. PO Box 839, Ontario, Canada, N0G1ao.

New RCBS Uniflow Powder Measure, with RCBS micrometer adjustment screw, stand, $50. Call after 9:00 EDST, (914) 565-2237.

109 new Sako .220 Russian Cases, 39 are necked down to 6mm. **Wanted XP-100 .221 Fireball.** NO phone calls. Mail offers to: Occupant, 2517 Grantline, New Albany, IN 47150.

100 New .220 Russian Cases - make offer! AMT Autoscale like new $150. Wilson 6BR Seating Die - new $25. Custom Products 6PPC seating die -w/ .262 nk. bushing - $35.Neilson Neck Turning Tool with 6mm & .224 mandrels - like new $150. Kimber super Varmint 6PPC new condition - $750. Weatherby 7MM, left hand, glass stock, rings $750. Custom Rem. 700 in .300 Weatherby, SS bbl., glass stock. Win. safety, left-hand, new $950. Win Mod. 62A, 22LR, excl. cond., $395. Sako Riihmaki .222, rings, excl. cond. $550. Leupold 2 1/2 - 8, new $125. Swarovski 8X Binoculars, rubber armored, $500. Jim (510) 351-2920.

No PPC Brass to sell. FDC Olympian .22 rimfire barreled action (Firearms Development Corporation) single shot action, Anschutz Trigger, Shilen BBL., bedding block, $900. Targetech BR-50, .22 rimfire rifle by Larry Brown, Remington 581 barreled action, muzzle-break cut off and barrel recrowned, silver gray McMillan stock with BR-50 logo, $400. Bruce (513) 542-3488.

I will trade (even up) an original laminated stocked Stolle Big Gun (round steel receiver) and new Shilen Barrel for a "new" 45 Gold Cup. Call Bob Simonson (616) 679-5572 after 7:00 PM.

.220 Russian (virgin) and (used) PPC/Waldog brass; 36X Leupold with locks opposite the adj. knobs; unaltered 24X Leupold. (505) 437-9052.

Shilen DGA (**D**amn **G**ood **A**ction) complete rifle, .243 Winchester, sporter, wood stock, repeater, pillar bedded, $1800. (708) 579-3033.

For Sale: Light Varmint sleeved Rem 722, 222 Rem, Hart barrel, Hart trigger, painted McMillan stock, Kempfer smithed, seater, sizer and cases, bullets, bore guide - $550.00; Leupold 36X - $275; Hart rest with bags $85; Kempfer arbor press $40; Lyman powder measure $30; all items plus shipping and ins. PA residents add 6% sales tax. FFL req'd for shipment of rifle. Jim Borden (717) 833-2234 or Fax: (717) 833-2382.

For Sale: New Rem 700 270 Win barrel $25; new Rem 700 30-06 barrel $25; new Rem 700 7mm Rem mag barrel $50; Rem 700 triggers $30; Leupold reconditioned 36X $300; Hart barrel - 6.5x55 Imp fitted for M70 Win $75; 700 BDL SA floorplate $45; Model 7 floorplate $40; Rem 700 UMT 22-250 barrel $20; 90 .308, 250 grain MatchKings $15; chromed Hart rest w/Sinclair top $125; 7STW JGS reamer $75; 220 Swift JGS reamer $75; 25-06 JGS reamer $75; 6 Rem BR JGS reamer $75; 6 BR Henrickson reamer (.262 NK) $90); Jim Borden (717) 833-2234 or Fax: (717) 833-2382.

For Sale: Heavy Varmint 6PPC, FDS action, Hart barrel, McMillan unpainted stock, Hart trigger, with 25 .220 Russian cases. Real good shooter $900. Hunter class 6x250 Imp, completely trued Rem 700, Hart barrel, McMillan unpainted stock, Olewine 2 oz. trigger, cases, seater & Tong tool sizer $900. FFL req'd for shipment. PA residents add 6% sales tax. Jim Borden (717) 833-2234 or Fax: (717) 833-2382.

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OFFICIAL SCREAMER NEWS

This will be our final Screamer report for the 1991 match season. As related earlier, in our December issue editorial, to our considerable surprise we exhausted our supply of 100 Screamer patches in mid-October. That amount has always been more than adequate in previous years. We will order a larger number for 1992. We respectfully suggest that when you have fired a good group ... apply for the patch shortly thereafter. Shop early ... avoid the rush later!

August was covered earlier, but a few more patch applications for August have since drifted in here, somewhat akin to homeless little waifs, looking for shelter from the storm.

ARMOND PAGLIAI fired an .074 100 yard group in the heavy varmint class at the Moscow, Iowa range on August 24th.

ED WATSON fired an .084 group at 100 yards in the sporter class at Midland, Texas, during the NBRSA Nationals on August 7th.

MIKE LEWIS shot an .085 100 yard group at the Cody, Wyoming range on August 22nd. We don't know what class the group was fired in, so make up whatever class you would like.

DON CREACH fired his third screamer of the year, at the Oklahoma range on August 24th, an .080 in the heavy varmint class.

SEPTEMBER pretty much winds down the match season of the year. The day after Labor Day it starts snowing like crazy in places like Maine and Minnesota, and continues right up to Memorial Day. Note that we did not mention North Dakota. Some things are just too depressing for inclusion in our pages.

DAVID SELVY cut it a bit close on September 2nd, firing an .099 group at Visalia, California in the heavy varmint class.

JOHN VONEIDA fired a considerably larger group on September 8th at Williamsport, Pa. It measured 7,000. Which is not too shabby for a 1,000 yard, ten shot group.

LOWELL AMAND, also was at Williamsport on September 8th. He came away with a 7.187 group for his efforts.

TOM SAKAI, at Visalia, California on September 2nd, at the 200 yard stage of the heavy varmint class fired four groups in the sixes ... plus one at a .196 size. Things like that happen at Visalia on occasion.

BOB SCARBROUGH, at the London, Canada range on September 14th, shot an .089 group in the light varmint class at 100 yards.

BRUCE ANDERSON, at Wilton, Iowa shot an .096 group in the light varmint class at 100 yards on September 15th.

RONALD KLERK de REUS also at Wilton, Iowa on September 15th fired a real small one, a nifty .053 in the heavy varmint class. Nice group, Ronald.

ED CABOR, also at Wilton, Iowa on September 15th shot an .083 screamer in the heavy varmint class at 100 yards.

RICK WOODS hit the requirement for a screamer group right on the button with a .375 group, 200 yards, 10 shot unlimited class. Fired at the Roanoke, Virginia range on September 15th. Then, a bit later, just to show that he really could do it if he wanted to ... he added a .338 group to qualify for a second patch.

JERRY SCHAEFER, also at Roanoke on September 15th, also in the 10 shot unlimited class at 200 yards, put a .325 screamer downrange.

ANNE SCHAEFER, yet another shooter at Roanoke on September 15th, fired a 200 yard sporter class group that they measured at .181 in the scoring shed.

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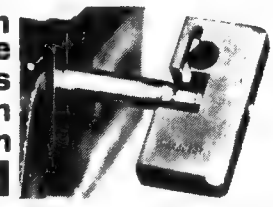
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OCTOBER finds everyone getting ready for the Halloween masquerade parties, and hence not much shooting is done. At the end of the month you can be a big hit at the party, disguised as a rail gun ... or maybe a cleaning rod.

DOUG REDDING, at Visalia, California on October 20th, fired an .084 group at 100 yards in the five shot unlimited class.

HAROLD WOLF, at Visalia, in the same match shot an .056 group, also in the five shot unlimited class.

OSCAR BASTIANI, at Augusta, Ohio on October 20th fired a .372 200 yard group in the ten shot unlimited class.

ERIK NIELSEN, of Australia, shot an .094 group at Frejus, France on October 2nd at 100 meter range in the light varmint class.

SCOTT WITHEY, also of Australia, managed to beat out his countryman with an .093 group in the same class, also at Frejus, France.

KELLY MORMAN of Lubbock, Texas on October 19th at Midland shot an .092 group in the light varmint class. This adds further fuel to the editor's theory that only Texans shoot screamers in Texas.

Finally we will have a listing of The Unfortunates ... those who sent their screamer applications in too late, as the patch supply was exhausted. You watch ... we'll order more patches for 1992 ... you just watch ... nobody will be able to hit the broad side of a barn all year long. It happens every time.

LEE ANDREWS shot an .082 5 shot unlimited target at Tacoma, Washington on May 25th.

PANCHO GARCIA at Bristol, Virginia for the Southeastern Regionals ... well, we know that he shot a real good group at 200 yards. We don't know the size of the group, but father (Manny) sometimes forgets smaller details. Fortunately Manny's word is good with us.

MANNY GARCIA shot a 200 yard group that measured .351 in the ten shot unlimited class at Greenville, Alabama on an unspecified date (see above comments on Manny and details).

BRUCE EPPERS, of Bedford, Virginia at the Reidsville, North Carolina range on October 26th fired a possible record target ... a ten shot unimited target that measured .104 ... and furthermore he shot it with a 10 1/2 pound rifle. Quite an accomplishment. Nice work, Mr. Eppers.

RICK WOODS, at the Buccaneer range at Wilmington, North Carolina on November 10th shot an .091 target in the light varmint class. The latest dated screamer group for 1991, it would seem.

ARMOND PAGLIAI, at the Wilton, Iowa range on October 27th shot an .074 100 yard group in the heavy varmint class ... the exact same measurement that he fired on August 24th.

DWIGHT FITZSIMMONS, also at Wilton, Iowa, but in their September match, shot a 100 yard group in the heavy varmint class that measured .080.

BARRY SULLENBERGER shot two screamers at Fairchance on August 31st, both at 100 yards, both in ten shot unlimited class. One measured .161, and the other .199.

GERALD FORYS, at St. Louis on October 19th, shot an .082 group in the light varmint class.

WILLIAM CLAYTON, at the Reeds Run range, on October 19th, shot an .091 group in the heavy varmint class.

FAYE BOYER, at Frejus, France on October 6th, at 200 meters, in the light varmint class tossed a .180 group downrange ... and that settled that.

GIL HUDSON, at Visalia, California on October 20th shot a five shot unlimited class target that measured .095.

DON NIELSON, also at Visalia on October 20th, in the five shot unlimited class fired an .082 screamer at 100 yards.

JERRY MASKER, at Reed's Run on October 19th fired a ten shot unlimited class target that came in at .138.

FRED HASECUSTER, at Fairfield, Ohio on September 29th shot a .196 200 yard group in the heavy varmint class.

ED WATSON, at Midland, Texas on October 20th shot a 200 yard .174 group in the heavy varmint class. This would seem to refute the editor's theory that only Texans shoot screamers in Texas. But then again ... this could be the exception that proves the rule.

THE ACCURATE VARMINT RIFLE

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CALFEE ACTION COMPARISON EXPERIMENT

by

Larry Brown

There is a man in southern Indiana who knows how to build adjustable-headspace rimfires. Noted for his silhouette pistols, he has also, for the last several years, been doing very good work with BR-50 rifles. In certain areas of business he and I are competitors, but calling it that probably elevates my status a bit too much. The work and technology involved in Targetech conversions isn't as complex as what I'm going to share with you about a test that he completed recently. His name is BILL CALFEE and my respect for his work continues to grow.

Bill and I have occasionally discussed various aspects of RIMFIRE accuracy and have discovered that we agree more than we disagree. Not long ago, pursuant to one of these discussions, he sent me a couple of audio cassettes whereon he describes his views on the topic, and also a description of an experiment he conducted in an effort to determine if there is, in fact, any "special" action among the top rimfire match types. The frustrating part of my trying to write this article is that you, dear reader, won't get to hear Bill himself, choosing his words carefully, making every attempt to convey his information with the same degree of accuracy that he maintained in the experiment itself. Trust me, there is value lost in my feeble transcription.

His goal was to discover the relative virtue of four of the top rimfire actions, and as a result, gain a clearer idea of their significance in the barrel/receiver group of components. "IS THERE ANY ONE NOTICEABLY SUPERIOR ACTION?" To accomplish this he used a Remington 40X, a Remington 37, a Winchester 52D, and an Anschutz 54. Now here's where it gets good. To maintain the integrity of the test, he selected ONE good Douglass chrome moly barrel, not necessarily a world-class barn burner, but a quite good one. (16 twist - .2215 groove dia.) He then set it up between centers and turned a "target" back from the muzzle so that, when returning to the lathe for future operations, he wouldn't have to re-do the crown because, in a four-jaw, he'd be able to indicate on this target area instead. He chambered with his best match reamer, for which he has a matching spud, thereby enabling him to not have to go back into that area again either. This barrel, with this original, untouched chamber, and with this original, untouched, 11-degree crown, was going to be fitted to each of these four actions for apples/apples comparison testing!

Based on years of experience, Bill sets all his rimfire headspace at 41½ thousandths. To avoid the extractor groove nightmare when changing actions, he turned a convex cone on the breech so that no matter what the barrel orientation became, the extractors would function. After a thorough check of the actions, (firing pin protrusion, striker force, spring clearance, etc) he then screwed on the 40X, (the largest barrel tenon), using recoil lug and all.

Off to the range with return-to-battery machine rest and several lots of his best Eley Tenex. This machine rest is a class act in itself. Various bushings grip the front receiver ring of whatever action is intstalled in it, and the scope mounts up on top of the whole thing. All else floats.

DUSK - DEAD CALM! The barrel prefers lot# WM1418. Ten foulers were fired followed by fifteen five-shot groups. The aggregate of these fifteen groups was .266 - now back to the shop!

The second-largest action was the Anschutz 54, a pinned barrel system. This action was threaded .845 X 20, and the threads on the tenon were run on out to accommodate a lock-ring to more easily facilitate headspacing. Keep in mind that when the barrel was put back in the lathe for these operations, that reamer-matching spud was installed in the chamber, and a four jaw chuck gripped the muzzle on a preset surface intended for the dial indicator. NO TOOLING TOUCHED THE CROWN OR CHAMBER!

Back to the range. DUSK - DEAD CALM! SAME BARREL, SAME CHAMBER, SAME HEADSPACE, SAME CROWN, SAME MACHINE REST, SAME AMMO, SAME SHOOTER, SAME CONDITIONS. Again ten foulers were fired, followed by fifteen five-shot groups. Aggregate - .271 !

The Remington 37 was the third-largest of the group, so following the same meticulous steps as before, the barrel was now threaded to .775 X 20 and again headspaced at .0415. After a few days of rain, optimum conditions returned and the next range test was conducted.
DUSK - DEAD CALM! SAME,SAME,SAME,SAME,SAME, etc. Ten foulers - fifteen five-shot groups. Aggregate - .259 !

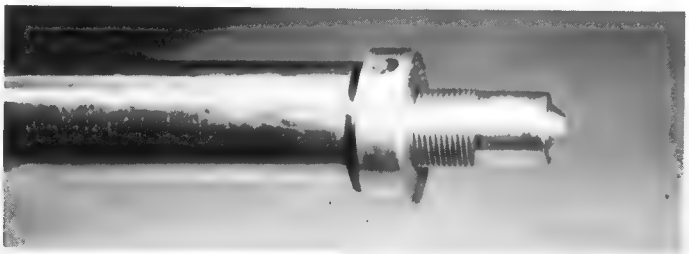
Finally the same full procedure was conducted with the Winchester 52D action. Ten fouler/15 group agg - .277 !

The aggregate-spread, over all sixty groups, evenly divided between four different actions, was EIGHTEEN THOUSANDTHS!! From these results Bill Calfee has drawn certain conclusions. So have I. But before stating those thoughts, we both think it would be interesting, and fun, to hear the conclusions of some of you readers about this. I envision a follow-up article. Write or call. (address & phone inside front cover) --Larry Brown

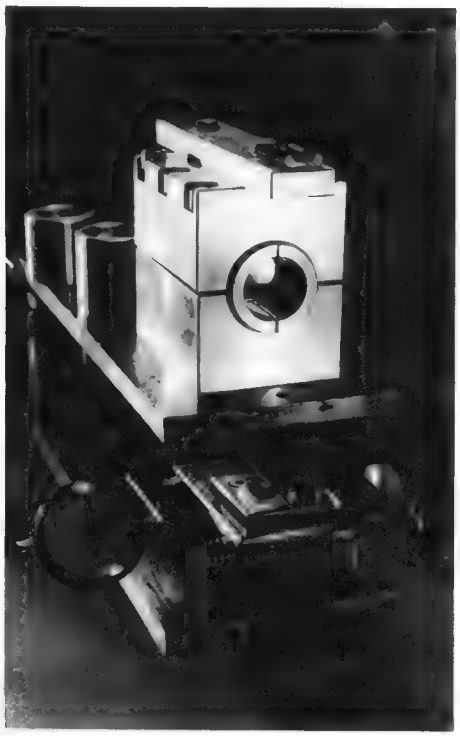
Larry Brown

The four actions used in the the test, and their respective bushings and lock-rings.

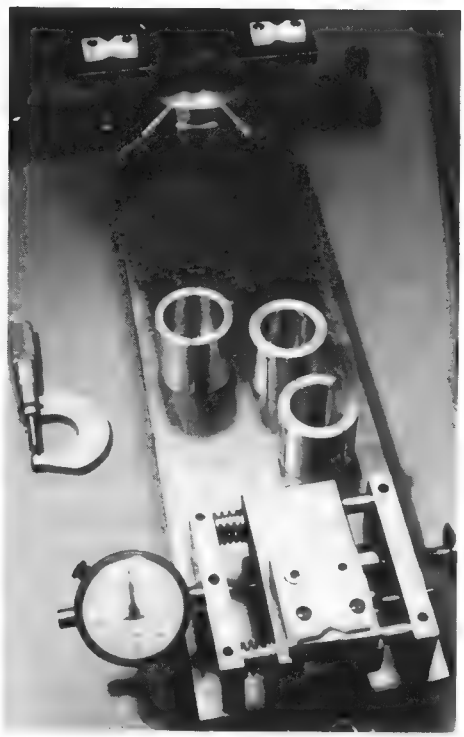
The barrel, (final threading) for Winchester 52. Cone breech negates need for extractor slots.



Barrel with lock-ring in place.



Return-to-battery machine rest with gun carriage on top.



Return-to-battery machine rest base, (without gun carriage).

IBS News

Edited by Dave Brennan

1991 SCORE SHOOTING STATS

In 1991 IBS Score Shooting underwent several changes and additions that has enhanced our sport. One being the separation of Score Shooter of the Year into a 6X Class and a Varmint Class which produced some very spirited competition. Two new ranges, Bowmanstown Rod and Gun Club and J. J. Palmissano Memorial Range, were added to IBS Score Shooting. Both ranges did a fine job in running their matches and the score shooters supported them with their attendance. Also, 1991 was the year we had 4 State championships — Maine, Maryland, New York, and Pennsylvania. All the championships were well received and attended. Thanks to all who worked and competed at these and all score shooting ranges. Through the efforts of many, we have again exceeded the previous year's statistics. Below are the figures:

NUMBER OF SHOOTS	48	
LARGEST SHOOT	82	(DUNHAMS BAY: NATIONALS)
LARGEST SINGLE DAY SHOOT	65	(J.J. PALMISSANO MEMORIAL RANGE)
NUMBER OF PEOPLE WHO SHOT AT LEAST ONCE IN 1991	292	

TOTAL AGGREGATES	1797	
TOTAL 6X SCOPE AGGREGATES	725	
HUNTER	411	
VARMINT-HUNTER	314	
TOTAL VARMINT AGGREGATES	1072	

NUMBER OF 250'S SHOT IN HUNTER CLASS	17	4%
NUMBER OF 250'S SHOT IN VARMINT-HUNTER CLASS	33	11%
NUMBER OF 250'S SHOT IN VARMINT CLASS	389	36%

AVERAGE COMPETITORS PER SHOOT	38
AVERAGE HUNTER CLASS COMPETITORS PER SHOOT	9
AVERAGE VARMINT-HUNTER CLASS COMPETITORS PER SHOOT	7
AVERAGE VARMINT CLASS COMPETITORS PER SHOOT	22

AVERAGE WINNING SCORE: 100 YARDS HUNTER	248-12X
AVERAGE WINNING SCORE: 100 YARDS VARMINT-HUNTER	249-11X
AVERAGE WINNING SCORE: 100 YARDS VARMINT	250-18X
AVERAGE WINNING SCORE: 200 YARDS HUNTER	244- 3X
AVERAGE WINNING SCORE: 200 YARDS VARMINT-HUNTER	244- 4X
AVERAGE WINNING SCORE: 200 YARDS VARMINT	248- 5X
AVERAGE WINNING SCORE: 300 YARDS HUNTER	232- 2X
AVERAGE WINNING SCORE: 300 YARDS VARMINT-HUNTER	235- 3X
AVERAGE WINNING SCORE: 300 YARDS VARMINT	245- 1X

Some additional interesting information obtained from the match reports is printed here for your enjoyment and use. We took the information from the equipment lists on the match reports and is based on first place finishes only.

The numbers following the names indicate the number of times this manufacturer's equipment was involved in a first place win.

While mulling over the match reports many interesting facts can be found and compiled. This year one stands out in particular. In Varmint Class out of 48 shoots only 1 was won with a 249, in Hunter Class 15 shoots were won with a 250 while 14 were won with a 249 and in Varmint-Hunter Class 21 were won with a 250 and 12 were won with a 249. Score Shooting has always been relaxing and fun, but as you can see by these stats, it is far from being easy. The competition level has again been raised by a great bunch of Score Shooters!!!!!!

Score Shooting Statisticians
Bill and Marty Creasy

CLASS	BARREL	SCOPE	BULLET
HUNTER	HART - 20	WEAVER - 12	GTB - 8
	SCHNEIDER - 9	LEUPOLD - 12	SG - 6
	MAC LENNON - 1	LYMAN - 7	TAR-HUNT - 5
	WEISMAN - 1	PECAR - 1	CHISM - 3
	LILJA - 1	ZEISS - 1	BERGER - 3
	CHANLYNN - 1		PASTORELLA - 3
VARMINT-HUNTER	HART - 16	LEUPOLD - 16	WATSON - 5
	SCHNEIDER - 6	WEAVER - 7	RUBRIGHT - 5
	CHANLYNN - 4	BURRIS - 4	BERGER - 4
	MACMILLAN - 2	LYMAN - 3	EUBER - 4
	WEISMAN - 1		PASTORELLA - 3
	LILJA - 1		HILLS - 2
VARMINT	HART - 23	LEUPOLD - 29	EUBER - 5
	SCHNEIDER - 4	LYMAN - 2	WATSON - 5
	LILJA - 1	B & L - 2	RUBRIGHT - 5
	SHILEN - 1		FOWLER - 4
	CHANLYNN - 1		LYNN - 4
	MAC MILLAN - 1		BERGER - 3
	ATKINSON - 1		DE MONSTOY - 2

SCORE SHOOTER OF THE YEAR 1991

PL	COMPETITOR	TOTAL
1	MC KEE, FRANK	68.0
2	GILBERT, JOE	55.5
3	KOGOY, ALAN M. JR.	40.5
4	WEAVER, AL	34.0
5	LIVENGOOD, KENNETH	30.0
6	SHINKLE, ERWIN	29.0
7	FURROW, DWIGHT	27.0
	PASTORELLA, VINCE	27.0
9	FRITZ, RANDY	25.5
10	GREEN, GUY	23.0
	MC PHERSON, GARY	23.0
12	JOHNSON, BLAINE	22.5
	KOGOY, ALAN R.	22.5
14	BAKER, CARL	20.5
	JOHNSTON, MARK	20.5
17	CARUSO, DAN	16.0
18	HILLS, PARKER	14.0
19	HUNTER, ROY	11.5
20	SVACK, TOM	11.0

VARMINT SCORE SHOOTER OF THE YEAR 1991

PL	COMPETITOR	TOTAL
1	PARRECO, TED	38.5
2	LYNN, CARL	17.0
3	SVACK, TOM	16.5
4	COLLINS, DENNIS	15.0
	GINGHER, TOM	15.0
	JOHNSON, BLAINE	15.0
7	YINGLING, CHRIS	14.5
8	FURROW, DWIGHT	13.5
9	GEBHARDT, WILLIAM	12.5
	THEIS, WILLIAM	12.5
	VALAN, KENNETH	12.5
12	DEMPSY, W.	12.0
	WAECHTER, ROBERT	12.0
14	GOWER, ROGER	11.5
	ROGERS, G.	11.5
16	MILLER, RICHARD	10.5
	OGDEN, MARLIN	10.5
18	EUBER, LEE	10.0
	HAIN, RICHARD	10.0
	PERIA, TOM	10.0
	WAECHTER, CINDY	10.0

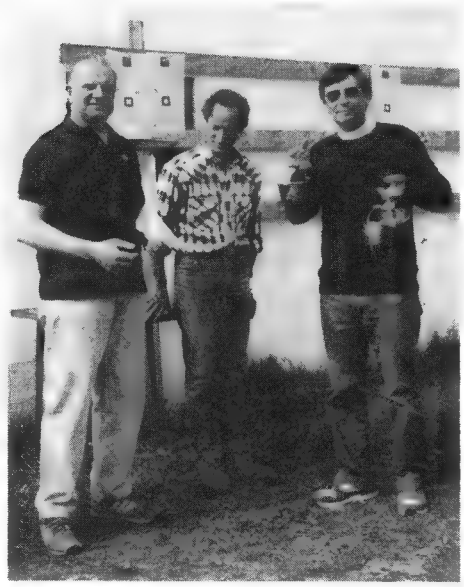
President's Message

This will be my last President's message. Because of health problems, I have been forced to resign as President of the IBS. Thank you for your encouraging words and support. It is all very much appreciated. I hope to continue to compete on a limited basis for as long as I am able. I look forward to seeing you at a match somewhere. I will be succeeded by Brian Hollister. I am sure that Brian will do an outstanding job as your President.

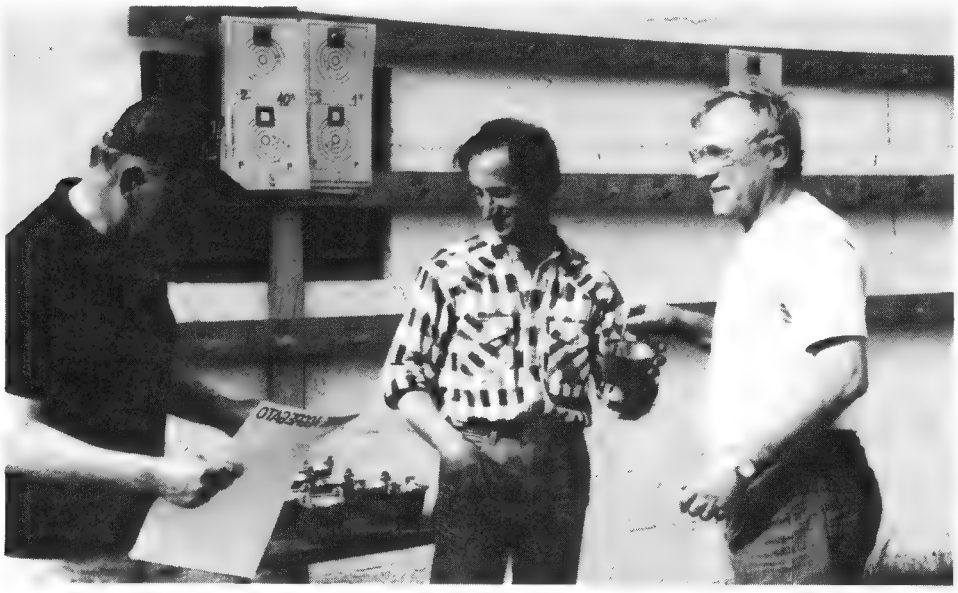
Jim Oliver

ITALY

One of the major events on the European match calendar each year is the match at Dobbiaco, in June. The match is held in the Italian Alps, near the Austrian border, in what is certainly imposing landscape. In 1991 it was conducted as usual by Tony Negri, who this year was just recovering from heart surgery. A good group of 37 shooters showed up to have a go at things. At 100 meters: 1.) Herve Duplessis .2558, 2.) Piere Condomines .2662, 3.) Mimi Cauvin .2877, 4.) Martin Menke .2882, 5.) Jean Claude Gros .2895. At 200 meters: 1.) Herman Grassle .2959, 2.) Ekkerhard Widmann .3069, 3.) Jean Claude Gros .3113, 4.) Helmut Hutter .3160, 5.) Peter Hammerich .3438. Grand agg: 1.) Jean Claude Gros .3004, 2.) Pierre Condomines .3050, 3.) Ekkerhard Widmann .3060, 4.) Hermann Grassle .3067, 5.) Herve Duplessis .3074.



Toni Negri - J. C. Gros



SELKIRK

The Selkirk Benchrest Shooters Range was the scene of their annual Buffalo Shoot June 8th & 9th. We shot two classes, light and heavy varmint and on Saturday evening put on a Buffalo Bar-B-Q (with real Buffalo meat) for the contestant's.

Light varmint (20 shooters) 100 yards: 1.) Al Hiebert .2790, 2.) Murray Benson .3072, 3.) Stan Legg .3312, 4.) Grant Schick .3316, 5.) Al Phillips .3332. Small Group was George (Corky) Holter with a nice .188. 200 yards: 1.) Ted Gaillard .2224, 2.) Al Phillips .2622, 3.) Bill Slocombe .2662, 4.) Al Hiebert .2751, 5.) Peter Penner .2848. Small Group was Ted Gaillard with a small .292. Grand agg: 1.) Al Hiebert .2771, 2.) Ted Gaillard .2852, 3.) Al Phillips .2977, 4.) Bill Slocombe .3165, 5.) Lance Seib .3223. Grand agg winner Al Hiebert shot a 6PPC on a Stolle action and Schnider barrel. He had a 36X Leupold on top and Simison was the gunsmith with Sinclair doing the stock work. Al used 27.0 grains of GI322 and 68 grain Stricker bullets to get the job done.

Heavy varmint (20 shooters) 100 yards: 1.) Ted Gaillard .3156, 2.) Herman Hefta .3288, 3.) Al Hiebert .3382, 4.) Gerry Bourgalt .3538, 5.) George Holter .3670. Small group was Al Hiebert with a .167. 200 yards: 1.) Ted Gaillard .2357, 2.) Lance Seib .2371, 3.) Chuck Pond .2948, 4.) Gerry Bourgalt .3060, 5.) Al Phillips .3113. Grand agg: 1.) Ted Gaillard .2757, 2.) Lance Seib .3253, 3.) Gerry Bourgault .3299, 4.) Al Hiebert .3397, 5.) Al Phillips .3484. Grand agg winner Ted Gaillard used a Wichita action and his own barrel in a 6PPC to get to the winner's circle. He did his own gunsmithing and stock work and used a 36X Leupold to find the targets. His load of 28.5-H322 and 68 grain Euber bullets did a real fine job for him.

Winners of the Two Gun agg: 1.) Ted Gaillard .2805, 2.) Al Hiebert .3084, 3.) Al Phillips .3231, 4.) Lance Seib .3238, 5.) Jerry Bourgalt .3382.

Reported by: Murray Benson
Selkirk Benchrest Shooters Association

TARGETS

Target No.	Target Description	Quantity	Total Weight	List Price per 100
IBS-B/1	100 YD Benchrest—Black 8x15½	500	15	7.00
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IBS-H/3	300 YD Hunter—Black 13x26	250	22	25.50

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ADD	$4.00	$7.00	$12.50	$16.50	$24.50	$40.00	$56.50	Truck Rates	$3.50

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SELKIRK

On August 24th and 25th Selkirk held the Manitoba Light and Heavy Varmint Championships. The weather cooperated, which is strange for Selkirk and I think everyone enjoyed themselves. Saturday right after the matches we held a steak Bar-B-Q with all the fixings, a nice way to end the day's events.

On a sadder note, two fine gentlemen who regularly attended our shoots, passed away this spring. Through the efforts of Jerry and Cathy Simison, Grant Schick and the Selkirk Benchrest Club, we decided on two memorial trophies to honor Everett Amundgaard and Jim Smola. The trophies will be presented each year for 1st place in the two gun agg and 1st place in the heavy varmint agg. All the people who attend our shoots will surely miss these fine sportsmen.

And now on to the results.

Light varmint with 17 shooters 100 yards: 1.) Grant Schick .3140, 2.) Brad Holter .3224, 3.) Herman Hefta .3472, 4.) Harold Wasnie .3520, 5.) Rod Uggerud .3586. Small group, Brad Holter .168. 200 yards: 1.) Herman Hefta .2778, 2.) Jerry Bayton .2865, 3.) Grant Schick .3182, 4.) Al Phillips .3195, 5.) Brad Holter .3217. Small group, Herman Hefta .322. Grand agg.: 1.) Herman Hefta .3125, 2.) Grant Schick .3161, 3.) Brad Holter .3221, 4.) Harold Wasnie .3641, 5.) Al Hiebert .3906. Grand agg winner Herman Hefta shot a 6PPC on a Stolle action and a Hart barrel, Simison did the gunsmithing and Sinclair did the stock work. Herman used a 36X Leupold and we have no information on his load.

Heavy varmint with 19 shooters 100 yards: 1.) Grant Schick .3020, 2.) Al Hiebert .3162, 3.) Murray Benson .3420, 4.) Lance Sieb .3604, 5.) Herman Hefta .4040. Small group goes to Lance Sieb with a .183. 200 yards: 1.) Grant Schick .2428, 2.) Herman Hefta .2603, 3.) Murray Benson .2820, 4.) Jerry Bayton .2843, 5.) Al Hiebert .3029. Small group was put together by Murray Benson .295. Grand agg: 1.) Grant Schick .2724, 2.) Al Hiebert .3096, 3.) Murray Benson .3120, 4.) Herman Hefta .3322, 5.) Jerry Bayton .3552. Grand agg winner Grant Schick shot a 6PPC on a Swinschick action and a Krieger barrel. Grant did the gunsmithing and stocking himself and used a 36X Leupold to form his groups. He used 27.5 grs. of Nobel 322 and 68 gr. Bergers to get the job done.

Two gun agg: 1.) Grant Schick .2934, 2.) Herman Hefta .3224, 3.) Al Hiebert .3501, 4.) Murray Benson .3734, 5.) Brad Holter .3764.

Reported by: Murray Benson
Selkirk Benchrest Shooters Association

CAMILLUS

The December 1st varmint for score match of the Camillus Winter League drew 16 shooters to the New York State range. Top shooters for the day were: 1.) Jim Oliver 249-13x, 2.) Jason Oliver 249-10x, 3.) Tim Simbari 249-6x, 4.) Frank Cleary 248-11x.

The December 15 varmint for score match at Camillus was unique in one respect at least... nobody brought any wind flags... everybody just figured that the other guy would bring flags today. Note the drop in the scores: 1.) Tim Simbari 245-2x, 2.) G. Malerba 243-7x, 3.) R. Lamanna 243-6x.

The December 29th varmint for score match saw the return of both some wind flags, and (accordingly) higher scores. Top shooters for the day: 1.) Tim Simbari 250-10x, 2.) George Getty 250-7x, 3.) Frank Cleary 249-14x.

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FRANCE

The French Championships (restricted to French shooters), plus the Grand Prix de France (open to everyone) were held at Montalieu, France on June 24-30, 1991.

Heavy varmint, 100 meters: 1.) Herve Duplessis .2488, 2.) Patrick Bouah-Kamon .2551, 3.) Alexandre Metzler .2569. At 200 meters: 1.) Francois Lecourt .2569, 2.) Carols Pacheco .2757, 3.) Benoit Wilt .2802. Grand agg: 1.) Benoit Wilt .2694, 2.) Francois Lecourt .2785, 3.) Etienne Becker .2936, 4.) Roger Serain .2937, 5.) Jean-Pierre Boniface .2967.

Light varmint, 100 meters: 1.) Jean-Claude Gros .2413, 2.) Jean-Pierre Troin .2530, 3.) Cecile Boisrond .2835. At 200 meters: 1.) Roger Serain .2870, 2.) Benoit Wilt .3092, 3.) Pierre Holzacker .3519. Grand agg: 1.) Roger Serain .2926, 2.) Herve Duplessis .3347, 3.) Jean-Claude Gros .3408, 4.) Cecile Boisrond .3417, 5.) Jean-Pierre Troin .3432.

Two gun aggregate: 1.) Roger Serain .293, 2.) Francois Lecourt .311, 3.) Etienne Becker .319, 4.) Herve Duplessis .328, 5.) Benoit Wilt .329.

1992 EUROPEAN SCHEDULE

April 10-11-12 — Frejus, France. HV 100-200-300 meters. Arena Cup Match.

May 1-2-3 — Souppes sur Loing, France. HV/LV 100-200 meters, HV 300 meters. European Benchrest Spring Trophy.

June 5-6-7 — Dobbiaco, Italy. HV/LV100-200 meters. European Benchrest Championships.

June 24-25 — Frejus, France. LV 100/200 meters. French National Championships.

June 26-27-28 — Frejus, France. HV 100-200-300 meters. Grand Prix de France.

July 2-3-4 — Rheine, Germany. HV 100-200-300 meters. Rheine International Shoot.

August 8-9 — Saalfelden, Austria. HV 100-200 meters. (This match has to be confirmed.)

September 12-13 — Souppes sur Loing, France. HV 100-300 meters. Trophy Cup.

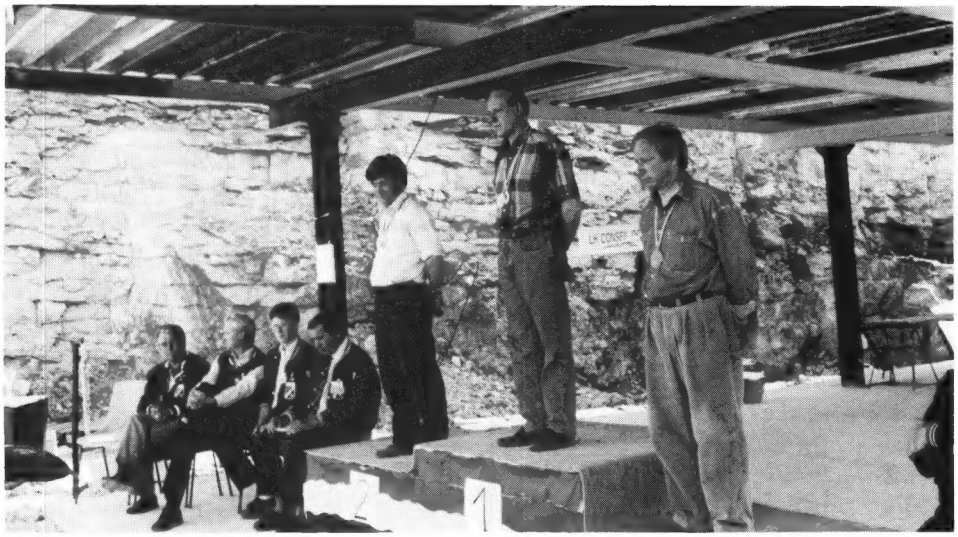
September 17-18-19 — Bisley, England. UNL 1000 yards, HV 100-200 yards. International Benchrest Championships.

September 18-19 — Wiesbaden, Germany. LV/HV 100-300 meters. Wiesbaden International Shoot.

Herve Duplessis, winner at 100 meters, heavy varmint class.

Roger Serain - two gun winner.

Left to right: R. Serain, J.P. Boniface, Wilber Teah, H. Duplessis, Etienne Becker, C. Pacheco, B. Cauvin, Holzacker.



Roger Serain "loaded", Francois Lecourt left, Etienne Becker right.

All shooters awarded.

CENTRAL JERSEY WINTER LEAGUE

Dear Dave:

On December 29th, the Central Jersey Rifle and Pistol Club (CJR&P) conducted its Third IBS registered 100 yard Varmint for Score Tournament.

Congratulations go out to rookie shooter Glenn Falone who won the match. Not only did Glenn beat some very seasoned shooters, he did it without using any wind flags. So much for hard and fast rules in benchrest.

Our thanks go out to Boy Scout Troop 32 from Mt. Holly, NJ for running the target crew during the match.

Geza Nagy had a very interesting experience when one of his shots keyholed and just hit the six ring. This certainly created a very lively discussion on the line after the match.

Conditions were cloudy, rain and mist all day, with very subtle wind conditions. The flags were soaking wet and were very hard to read. The results for the day reflect the weather conditons: 1) Glenn Falone 250-15x, 2) Bert Rypkema 250-14x, 3) Jerry Faul 249-14x, 4) William Heuer 249-10x, 5) John Fleschner 249-9x.

Jerry Wm. Faul

1992 IBS GROUP SHOOTING SCHEDULE

February 2 — DUNHAMS BAY, Lake George, NY — 100 meter HV, 100 yard hunter, 11:00 am

February 15-16-17 — FLORIDA STATE CHAMPIONSHIPS — S and HB - Sat.; LV and HV - Sun.; H and VFS - Mon. Preregistration to Tony Hidalgo please

February 16 — DUNHAMS BAY, Lake George, NY — 100 meter HV, 100 yard hunter, 11:00 am

March 1 — DUNHAMS BAY, Lake George, NY — 100 meter HV, 100 yard hunter, 11:00 am

March 15 — DUNHAMS BAY, Lake George, NY — 100 meter HV, 100 yard hunter, 11:00 am

March 29 — DUNHAMS BAY, Lake George, NY — 100 meter HV, 100 yard hunter, 11:00 am

April 5 — DUNHAMS BAY, Lake George, NY — 100 meter HV, 100 yard hunter, 11:00 am

April 26 — DUNHAMS BAY, Lake George, NY — 100 meter HV, 100 yard hunter, 11:00 am

Newsletter 1991

October 6, 1991 Newsletter # 10

Match # 10

Winning Equipment

8 Relays 80 Shooters

Name	Group	Cal.	BBl.	Scope	Gunsmith
1. Larry Mitchell	12.500	30-378	Hart	Unertl	Howard Wolfe
2. Earl Chronister Blk.	11.250	30-378	Hart	Unertl	Gene Graybill
3. Terry Myers	8.531	30-378	Kreiger	Unertl	Miller & Barnes
4. Bud Hauser	8.312	300 Wby.	Douglas	Unertl	John Stoppa
5. Carol Cassel	9.250	300 Wby.	Hart	Unertl	
6. Walt Bryan	9.062	300 B-H	Kreiger	Unertl	John Stoppa
7. Bob Wolfe	11.062	30-378	Hart	Unertl	Howard Wolfe
8. Jim Chapman	9.500	308 Baer	Oberm.	Unertl	Bruce Baer

Name	Score	Cal.	BBl.	Scope	Gunsmith
1. Jack Deppen	89	308 Sup.	Hart	Leupold	Gene Graybill
2. Harvey Metz, Sr.	94	308 Baer	Oberm.	Unertl	Bruce Baer
3. Bill Hagerman	96 Blk.	308 Baer	Hart	Leupold	Bruce Baer
4. Bill Weirick	90	308 Baer	REm.	Unertl	Bruce Baer
5. Gene Graybill	78	308 Sup.	Hart	Unertl	Gene Graybill
6. Harold Rice	93	308 Sup.	Hart	Unertl	Gene Graybill
7. Wes Miller	86	30-378	Hart	Unertl	Miller & Barnes
8. Wrayburn Reinsmith	87	300 Win.	Hart	Unertl	D. Kern

Shoot Off Winner Group
CAROL CASSEL 15.687

Smallest Group Fired
BUD HAUSER 8.312

Closest to Center
PHYLIS BURK 0.375

Shoot Off Winner Score
GENE GRAYBILL 83

High Score of the Day
BUD HAUSER 97

Newsletter 1991

November 10, 1991 Newsletter # 11

Banquet Shoot

Winning Equipment

4 Relays 36 Shooter

Name	Group	Cal.	BBl.	Scope	Gunsmith
1. Bud Nester	7.812	300 Win.	Hart	Unertl	Gene Graybill
2. Henry Chapman	8.156	308 Sup.	Hart	Leupold	Gene Graybill
3. Rick Taylor	9.437	30 Taylor	Hart	Redfield	C. Hammond
4. Bill Hagerman	8.062	308 Baer	Oberm	Leupold	Bruce Baer

Name	Score	Cal.	BBl.	Scope	Gunsmith
1. Wayne Eveler	79	308 Baer	Oberm.	Leupold	Bruce Baer
2. Harvey Metz, Sr.	88	308 Baer	Oberm.	Unertl	Bruce Baer
3. Ralph Baskin	83	30-378	Hart	Unertl	Howard Wolfe
4. Earl Chronister	93	30-378	Hart	Unertl	Howard Wolfe

Shoot Off Winner Group
BILL HAGERMAN 16.218

Smallest Group Fired
BUD NESTER 7.812

Closest to Center
RALPH BASKIN 1.250

Shoot Off Winner Score
HARVEY METZ, SR. 85

High Score of the Day
EARL CHRONISTER 93

OFFICIAL AGGREGATE FOR 1991

GROUP		PLACE		SCORE
8.530	Paul DeWalt	1	Larry Mitchell	92.333
8.531	Sarah Morgan	2	Bill Hagerman	92.000
8.984	Bill Hagerman	3	Shirley Graybill	91.666
9.260	Steve Warner	4	Les Wilcox	91.333
9.286	Bob Wolfe	5	Sarah Morgan	91.166
9.338	Allen Miller	6	Paul DeWalt	91.000
9.405	Les Wilcox	7	Darryl Cassel	90.666
9.406	Harold Rice	8	Earl Chronister	90.500
9.431	Harvey Metz, Jr.	9	Bob Wolfe	90.500
9.817	Les Hagerman	10	Linda Hagerman	90.333
9.859	John Bledsoe	11	Tom Leighton	90.333
9.932	Shirley Graybill	12	George Reeder	90.166
10.239	Walt Bryan	13	Steve Warner	90.000
10.291	George Reeder	14	Les Hagerman	90.000
10.374	Linda Hagerman	15	Howard Wolfe	89.833
10.421	Harvey Metz, Sr.	16	Harvey Metz, Sr.	89.666
10.546	Larry Mitchell	17	Jim Chapman	89.666
10.572	Lowell Amand	18	Ted Morgan	89.666
10.707	Darryl Cassel	19	Vern Reed	89.666
10.786	Stan Grube	20	John Bledsoe	89.333
10.848	Jim Chapman	21	Bill Weirick	89.333
10.895	Terry Myers	22	Phylis Burk	89.000
10.916	Earl Chronister	23	Bill Majer	89.000
10.933	Betty Lauver	24	Wayne Linsenbach	89.000
11.036	Bruce Baer	25	Harvey Metz, Jr.	88.333
11.129	Tom Leighton	26	Betty Lauver	88.000
11.171	Ken Ridenour	27	Bob Moriarity	88.000
11.187	Howard Wolfe	28	Bud Hauser	87.833
11.234	Jim Berfield	29	Walt Bryan	87.666
11.265	Sid Goodling	30	Tom Petrzala	87.666
11.421	Jack Deppen	31	Stan Grube	87.166
11.489	Dwight Burk	32	Lowell Amand	87.166
11.551	Ted Morgan	33	Harold Rice	86.833
11.588	Bill Majer	34	Merle Wilcox	86.666
11.718	George Smith	35	Jodi Johnson	86.666
11.765	Wayne Linsenbach	36	Terry Myers	86.500
11.801	John Brownlee	37	Richard Lauver	86.500
11.822	Bud Hauser	38	John Brownlee	86.166
11.916	Merle Wilcox	39	Allen Eveler	86.166
12.067	Phylis Burk	40	John Voneida	86.000
12.083	Greg Peifer	41	Bruce Baer	85.833
12.311	Jim Petroff	42	Jim Berfield	85.833
12.640	Kent Rathgeber	43	Allen Miller	85.666
12.702	Wayne Eveler	44	Sid Goodling	85.666
12.811	Joe Saltalamachia, Sr.	45	Carol Cassel	85.666
12.817	Roy Mummey	46	Dwight Burk	85.666
12.859	Bob Moriarity	47	Ken Keefer	84.666
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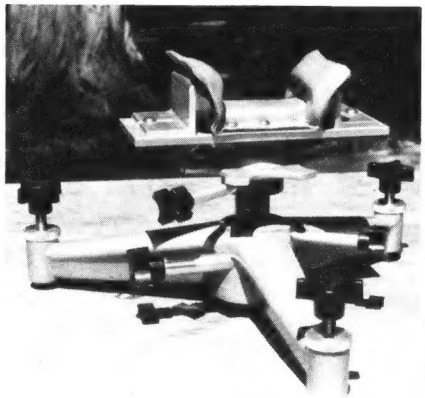

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